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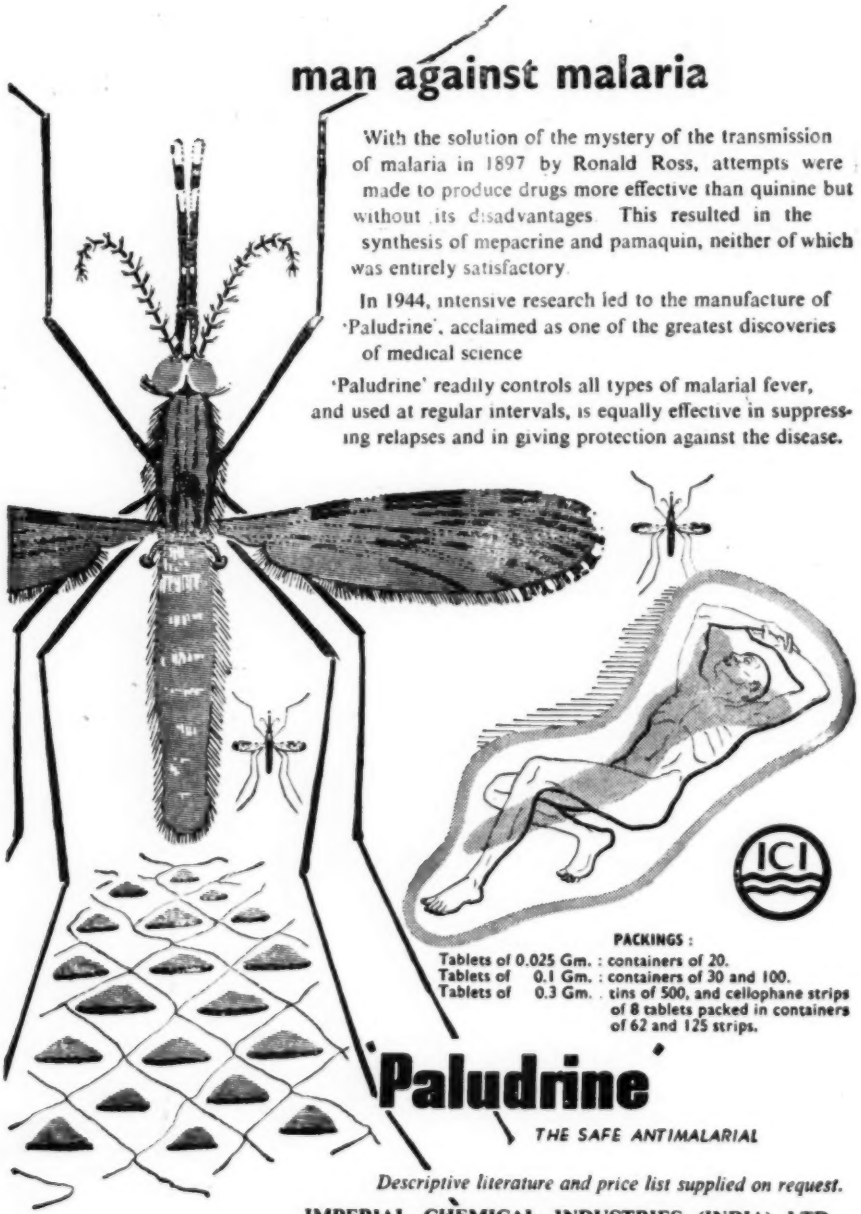

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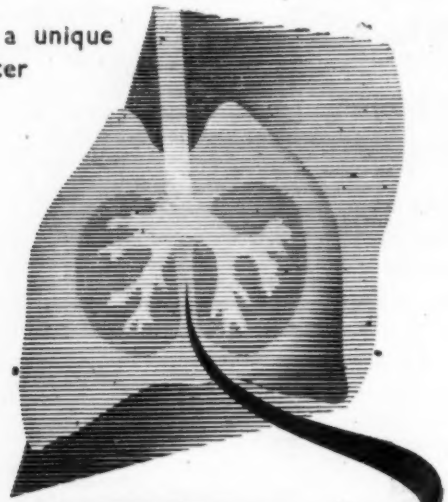

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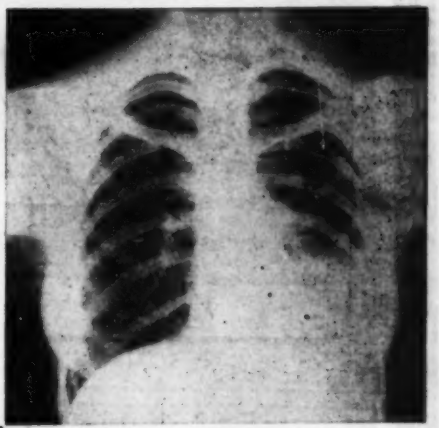

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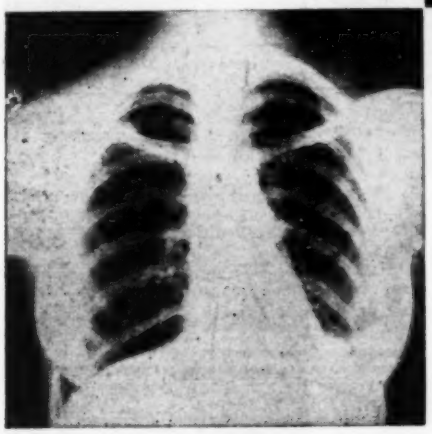

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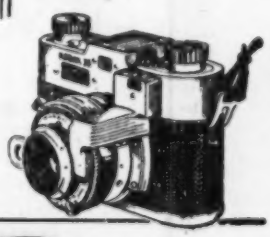

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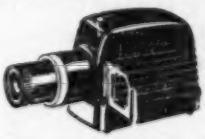

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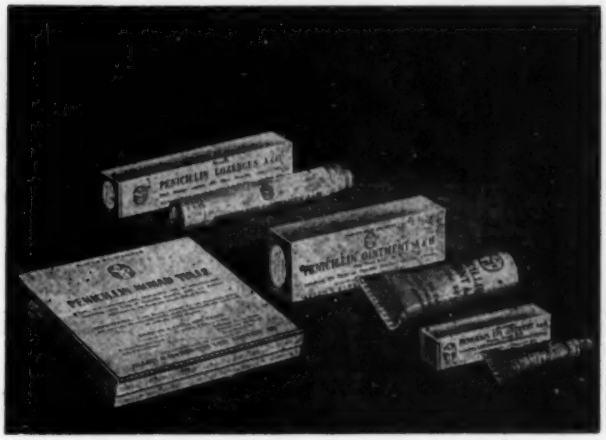

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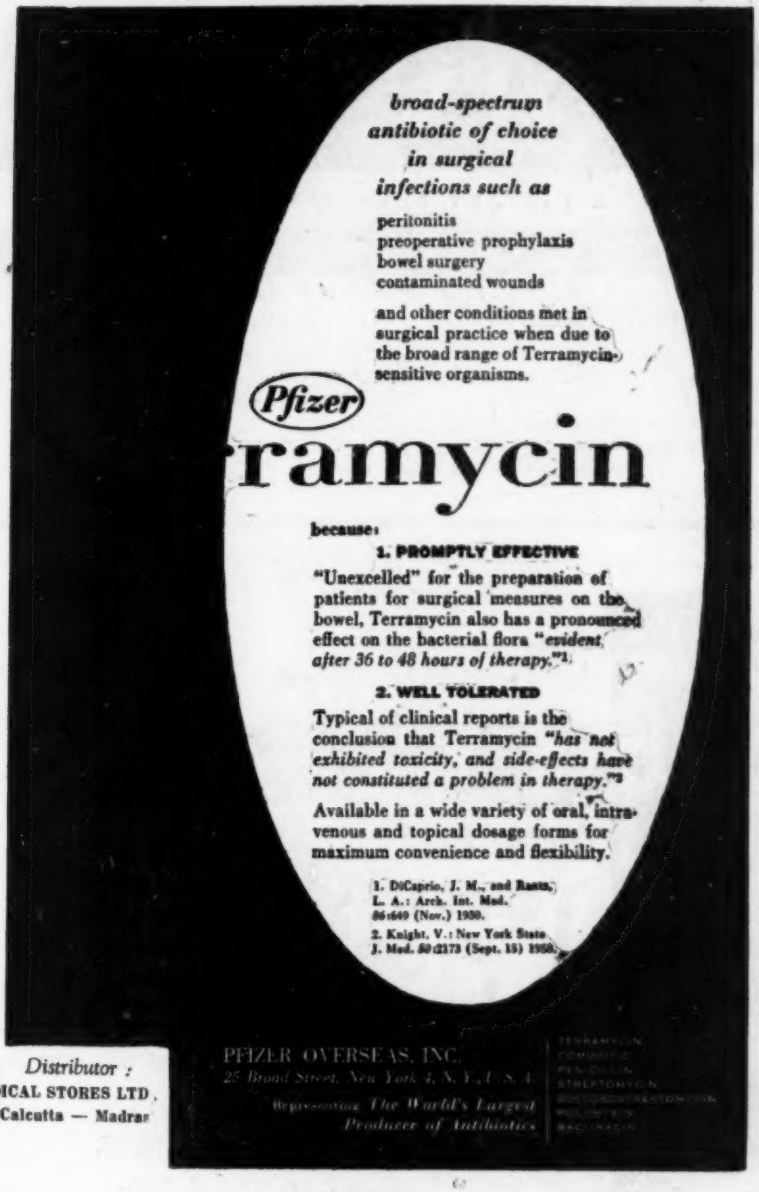
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1. DiCaprio, J. M., and Rasta, L. A.: Arch. Int. Med. 86:649 (Nov.) 1950.
2. Knight, V.: New York State J. Med. 50:2173 (Sept. 15) 1950.
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British Medical Journal. I, 24 (1952)

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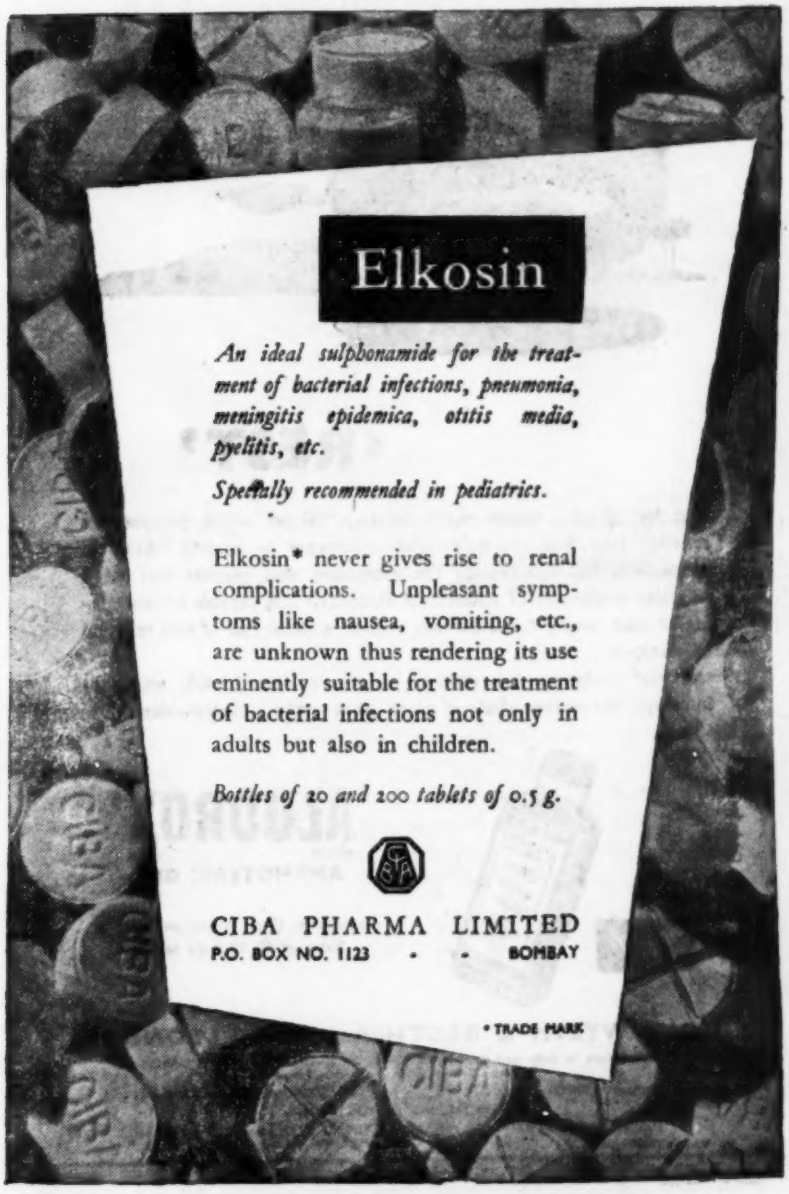
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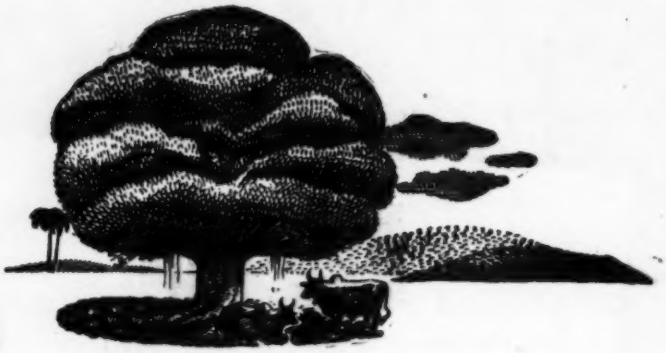

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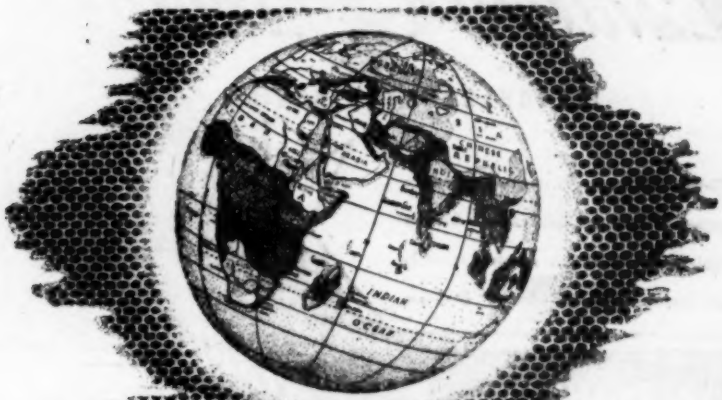

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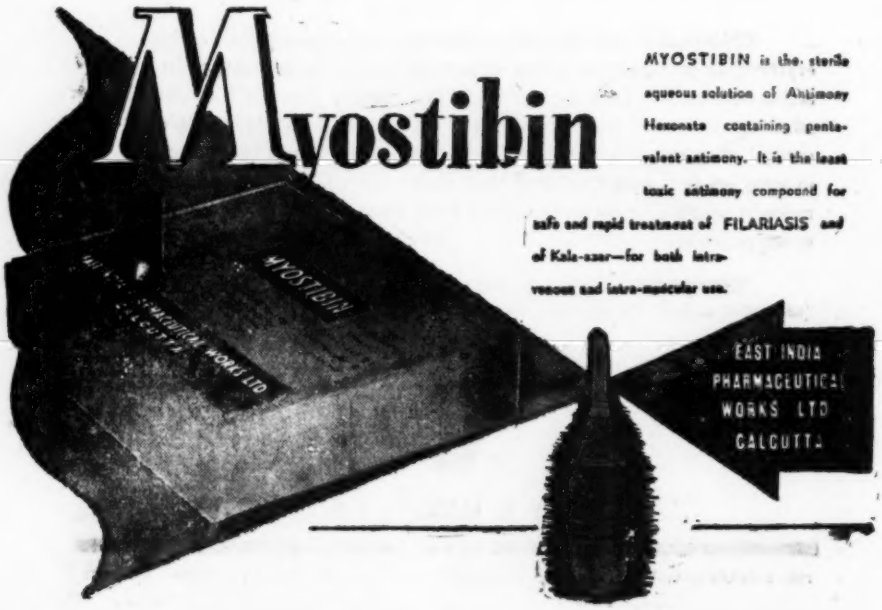

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ORIGINAL ARTICLES

STUDIES ON CARBOHYDRATE METABOLISM IN TOXAEMIA OF PREGNANCY

4. ACIDOSIS AND KETOSIS IN TOXAEMIA OF PREGNANCY

CHUNILAL MUKHERJEE,

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As early as 1915 Hasselbach demonstrated that pregnancy is associated with a decrease of the alveolar carbon dioxide tension, which becomes manifested in the second month of gestation. During subsequent years several observers (Losse and Van Slyke, 1916; Emge, 1918; Slemons, 1918; Cook, 1924; Schmidt and Wingen, 1928; and Stander and Cadden, 1930) have noticed that the carbon dioxide combining power of the blood decreases as pregnancy approaches term. Some authors (Emge, 1918; Cook, 1924; Bokelmann and Bock, 1926; and Schmidt and Wingen, 1928) believe that this acidosis of pregnancy is due to an accumulation of ketone bodies and lactic acid in the blood caused by a defective carbohydrate and altered fat metabolism. Estimation of the hydrogen ion concentration of the blood by Myers *et al* (1932), Kyd and co-workers (1932), Nice *et al* (1936), and Oberst and Plass (1940), however, did not show any decrease of the pH of the blood in this condition. Studies of Kyd, Oard and Peters (1932), and Stander (1934) suggest that the acidosis of pregnancy is due to a deficiency of the base concentration of the serum, although the latter in a normal subject is maintained in a well-compensated state.

In 2 out of 4 cases of eclampsia, Hasselbach and Gammeltoft (1915) found a marked increase in the fixed acids of the blood, which gave rise to a state of uncompensated acidosis. Subsequent investigations of Bokelmann and Rother (1828), Vozza (1927), MacNider (1928), Stander and Cadden (1930), and Osman (1930) show that the alkali reserve of the blood is markedly diminished in toxæmias of pregnancy, and especially in eclampsia. However, Gradwohl (1928) stated that "in toxæmias of pregnancy many authorities believe that instead of acidosis, in extreme cases we have alkalosis". It was, therefore, considered that a study of carbohydrate metabolism in toxæmia of pregnancy would remain incomplete without an adequate knowledge of the status of the alkali reserve of the blood.

MATERIALS AND METHOD

The state of acidosis was determined from the alkali reserve of the plasma, and the condition of the carbonic buffer system. The latter has been expressed as the ratio of $H.HCO_3$: $B.HCO_3$, which in the normal state is regarded as 1: 20. The total carbon dioxide content of the plasma was estimated in Van Slyke's volumetric apparatus by the method of Van Slyke, Wu and McLean (1923). The $B.HCO_3$ was estimated from the formula: volumes of $B.HCO_3$ (as CO_2) = volumes of total CO_2 – 0·067p, where p is the carbon dioxide tension (Van Slyke, *et al, loc. cit.*) The carbon dioxide tension was estimated by the method of Van Slyke and co-workers referred to above.

The results presented here are based on the investigation of 58 cases. Of these, 14 were cases of normal pregnancy. These provided the control. The series on toxæmia of pregnancy consisted of 30 cases of pre-eclampsia, and 14 cases of eclampsia. Direct potentiometric estimation of the pH of the blood was done in 20 cases of which 6 were cases of normal pregnancy, 8 of pre-eclampsia, and 6 of eclampsia. Throughout this investigation all the usual precautions necessary for blood gas analysis were carefully taken.

In order to understand the problem of ketosis in toxæmia of pregnancy the subject of ketonuria was also studied. The details concerning this will be presented in the appropriate place.

RESULTS

Normal Pregnancy.—Fourteen cases of normal pregnancy between thirty weeks and term admitted for the treatment of contracted pelvis were investigated as controls. In this series the total carbon dioxide combining power of the plasma was 51·85 ml. ± 2·00. The maximum value observed was 55·3 ml., and the minimum 49·8. The $H.HCO_3$ content of the plasma varied from 2·80 to 2·35 ml. per 100 ml. of plasma, the average value being 2·48 ml. ± 0·11. The $B.HCO_3$ content of the plasma measured on an average 49·37 ml. per 100 ml. of plasma ± 1·36. The individual values occupied a range between 52·7 and 47·2 ml.

The distribution of the values in relation to the mean for the total, combined and free carbonic acid is given below:

	−	*Mean ± Standard error*	+
No. of cases	4	8	2
Percentage	28·6%	57·7%	14·3

The $H.HCO_3$: $B.HCO_3$ ratio in this series was 1:21. The standard deviation of the denominator was 0·21.

The hydrogen ion concentration of the plasma was estimated by the potentiometric method in 6 cases of normal pregnancy. The pH recorded in these cases were 7·39, 7·40, 7·42, 7·42, 7·43 and 7·45, the average being 7·42 ± 0·02. The estimated pH in normal pregnancy was found to be in conformity with the ratio of $H.HCO_3$: $B.HCO_3$.

Comments.—The total carbon dioxide (free + combined) content of the plasma in normal resting adults is stated by Van Slyke (1918) to vary between 53 and 80 ml. per 100 ml. of plasma, with an average of 65 ml. Compared with this non-pregnant standard, there is a carbon dioxide deficit during pregnancy. The values observed in this study are in close agreement with those of other investigators (*loc. cit.*). The fall in the total carbon dioxide combining capacity of the plasma amounts to a little over 20 per cent of the normal value. In a normal individual the carbonic buffer system is maintained in such a manner that the ratio of $H.HCO_3$: $B.HCO_3$ remains 1 : 20. In pregnancy this ratio is not altered. Indeed, there is a decrease of the combined carbon dioxide to the extent of about 20·5 per cent of the normal value, but this is counterbalanced by a corresponding decrease of the free carbon dioxide. The deficit of the reserve alkali is well compensated, so that the pH of the blood does not differ from that in the non-pregnant state. The so-called acidosis of pregnancy is thus, a condition of compensated alkali deficit. In the maintenance of this compensation both the kidneys and lungs play an important role. The former conserves base by increasing the excretion of ammonia, and probably also by augmenting phosphorylation of fatty acids (phospholipoids are raised in pregnancy, Mukherjee, 1950), and the latter attains the object by eliminating an excess of carbon dioxide by hyperventilation. The investigations of Nice and co-workers (1936), and Oberst and Plass (1940) substantiate this. Nevertheless, the compensated acid-base balance does not protect a pregnant woman from a susceptibility to ketosis. It will be seen later that starvation causes acetonuria more frequently in a pregnant woman than in a non-pregnant subject. Such starvation ketosis as produced by our experiments was accompanied by only a slight decrease in the carbon dioxide combining capacity of the blood, and this was not attended with a failure of compensation. In this respect, the acidosis of pregnancy is different from acidæmia (M.R.C., 1923) of diabetes and uræmia.

2. *Pre-eclampsia.*—The carbonic acid and bicarbonate content of the plasma was estimated in 30 cases of pre-eclampsia, consisting of an equal number of mild and severely toxic patients. As there was a slight difference in the results of these two groups they will be presented separately.

Mild Pre-eclampsia.—The average total carbon dioxide content of the plasma was 49·96 ml. per 100 ml. of plasma ± 3·28. The range of variation was between 53·8 and 44·3 ml. The average concentration of the free carbon dioxide of the plasma was 2·38 ml. per 100 ml. ± 0·13. The maximum and minimum values for free carbon dioxide were 2·70 and 2·10 ml. respectively. The bicarbonate content of the plasma, expressed as carbon dioxide, was, average 47·58 ml. ± 2·22, maximum 51·1 ml., and minimum 42·2 ml. per 100 ml. of plasma. The distribution of values around the mean is shown below:

	−		*Mean ± S. E.*		+	
	No. of cases	%	*No. of cases*	%	*No. of cases*	%
Total CO_3 ...	2	13·3	12	80·0	1	6·7
H. HCO_3 ...	2	13·3	10	66·7	3	20·0
B. HCO_3 ...	1	6·7	13	86·6	1	6·7

The ratio of $H.HCO_3$: $B.HCO_3$ in this series was 1 : 20. The standard deviation of the denominator was 0·33. The range of the ratios was from 1: 19·5 to 1 : 20·6.

Severe Pre-eclampsia.—The values obtained in these cases were to some extent lower than those of the former group of toxæmia. The average total carbon dioxide was 47·18 ml. ± 2·04. The maximum and minimum values were 50·9, and 44· 2 ml. respectively per 100 ml. of plasma. The values for free carbon dioxide in this series were, average 2·24 ml. ± 0·077; maximum 2·4 ml; and minimum 2·1 ml. per 100 ml. of plasma. The bicarbonate level of the plasma in severe toxæmia was, average 44·94 ml. ± 2·14; maximum 48·5 ml.; and minimum 42·1 ml. per 100 ml. of plasma. The distribution of values around the mean is given below:

	−		*Mean ± S. E.*		+	
	No. of cases	%	*No. of cases*	%	*No. of cases*	%
Total CO_3 ...	2	13·3	9	60·1	4	26·6
B. HCO_3 ...	2	13·3	9	60·1	4	26·6
H. HCO_3 ...	2	13·3	10	66·7	3	20·0

The ratio of $H.HCO_3$: $B.HCO_3$ remained practically the same as that in mild toxæmia, the average being 1 : 19·93. The variations of the denominator were as follows : maximum 20·3, minimum 19·6, standard deviation 0·24. The fact that the ratio of the carbonic buffer system does not appreciably deviate from the normal in either type of toxæmia suggests that the change in the bicarbonate content of the plasma is accompanied by a proportionate readjustment of the level of the free carbon dioxide. Under such a condi-

tion the total carbon dioxide combining capacity of the plasma may be expected to indicate fairly accurately the state of acidosis present in toxæmia of pregnancy. In order to demonstrate this, Table 1, which shows the frequency distribution of the total carbon dioxide combining power in normal and toxæmic pregnancy has been compiled. The figures demonstrate a progressive fall in the alkali reserve of the plasma in mild and severe pre-eclampsia. The difference of the averages at each stage is statistically significant. The scatter of the values also shows this change. Thus, in 26·6 per cent of cases of mild, and in 80 per cent of cases of severe pre-eclampsia, the alkali reserve of the plasma was below the minimum in normal pregnancy. The decline of the maximum values in each series is also striking.

TABLE 1—FREQUENCY DISTRIBUTION OF THE ALKALI RESERVE OF THE PLASMA IN NORMAL PREGNANCY, AND PRE-ECLAMPSIA

Frequency ml. CO_2/100 ml.	*Norm. pregnancy* 14 *cases*	*Mild pre-eclampsia* 15 *cases*	*Severe pre-eclampsia* 15 *cases*
44·1—45	...	1	2
45·1—46	...	...	1
46·1—47	...	1	7
47·1—48	...	...	1
48·1—49	...	2	1
49·1—50	1	3	1
50·1—51	3	3	2
51·1—52	3	4	...
52·1—53	5	...	...
53·1—54	1	1	...
54·1—55	...	...	...
55·1—56	1	...	...
Average ± Standard Error	51·85±0·39	49·96±0·52	47·18±0·42

3. *Eclampsia.*—Fourteen cases of eclampsia, investigated for this purpose showed a more noticeable depreciation of alkali reserve than that in pre-eclampsia. The total carbon dioxide content of the plasma varied considerably in individual cases. The range of values was from 20·8 to 40·1 ml. per 100 ml. of plasma, with an average of 35·7 ml. ± 4·41. The bicarbonate content was 33·34 ml. ± 3·41. The maximum value was 37·7 ml., and the minimum 17·4 ml. per 100 ml. of plasma. The free carbon dioxide level was, average 2·36 ml. ± 0·28, its range being between 1·8 and 2·6 ml. per 100 ml. of plasma. The ratio of $H.HCO_3$: $B.HCO_3$ was changed to 1 : 14·2. The denominator varied from 6·7 to 18·6. The standard deviation of the average was 3·65.

In this investigation no moribund patient was included. One patient in this series had a fatal outcome. The first estimation done after 16 convulsions showed : Total CO_2 = 20·8 ml. Combined CO_2 = 17·4 ml. Free CO_2 = 2·6 ml. $H.HCO_3$: $B.HCO_3$ was therefore 1: 6·7. The patient at this stage was moderately comatose. The second estimation was done after 11 hours. The corresponding values were 14·2, 11·1 and 3·1 ml. respectively, per 100 ml. of plasma. The $H.HCO_3$: $B.HCO_3$ was 3·6. Between the first and second estimations the patient had two more convulsions and passed into a state of deep coma. Death occurred from anuria 16 hours after the second test was done. There were opportunities for repeating the estimations in three other patients. The findings are presented in Table 2. The principal indication for repeating the experiment was an aggravation of the state of coma. In the second patient only, two fits occurred between the tests. The nature of the change in the alkali reserve was almost identical in all three cases. The relation between acidosis and coma was observed not only in these patients, but also in the whole series of cases of eclampsia, as the following analysis will show (Table 3). Owing to the small number of investigations no attempt has been made to submit the data to statistical analysis. But an examination of the individual values amply demonstrate this change.

TABLE 2—THE EFFECT OF CONTINUANCE OF THE ECLAMPTIC STATE (3 CASES) ON ACID-BASE BALANCE

	I				II			
	Total CO_2	$B.HCO_3$	$H.HCO_3$	$\frac{H}{B}HCO_3$	*Total* CO_2	$B.HCO_3$	$H.HCO_3$	$\frac{H}{B}HCO_3$
1. C. 4 fits. (17 hrs.)	37·8	35·6	2·2	$\frac{1}{16·2}$	30·0	27·9	2·1	$\frac{1}{13·9}$
2. P. 1 fit (5 hrs.)	43·0	40·8	2·2	$\frac{1}{18·6}$	34·2	32·1	2·1	$\frac{1}{15·3}$
3. F. 4 fits (3 hrs.)	40·1	37·7	2·4	$\frac{1}{15·7}$	36·6	34·4	2·4	$\frac{1}{14·3}$

The time in parenthesis indicates the interval between the first and second tests.

TABLE 3—ALKALI RESERVE, AND ACID-BASE BALANCE IN ECLAMPSIA IN RELATION TO COMA

Degree of coma	*No. of cases*	*Total* CO_2	$\frac{B}{H}HCO_3$
±	2	40·8 : 43·0	18·8 : 18·6
+	3	40·1 : 38·0 : 38·6	15·7 : 17·7 : 15·8
+ +	5	34·2 : 36·6 : 37·0 : 37·8 : 30·2	15·3 : 14·9 : 14·7 : 16·2 : 12·7
+ + +	3	30·7 : 30·0 : 20·8	16·1 : 13·3 : 6·7
+ + + +	1	14·2	3·6

Hydrogen ion concentration. The hydrogen ion concentration of the plasma was estimated in 8 cases of severe pre-eclampsia, and 6 cases of eclampsia in this series. The pH in the cases of pre-eclampsia were 7·39 (1 case), 7·40 (2 cases), 7·41 (4 cases), and 7·42 (1 case). The average pH was 7·41 ± 0·01. The

difference from normal cases cannot be regarded as significant. Of the cases of eclampsia, the plasma pH in 3 patients were 7·37, 7·34 and 7·36. Two of these patients had only one fit, and the other (pH 7·36) had two fits before the blood samples were obtained. The degree of coma in all of them was slight. The other three patients were deeply comatose. The pH of the plasma was found to be 6·88, 7·22 and 7·27 respectively. The first of these patients had a fatal outcome, and 16 hours before death (11 hours after the first test) the pH declined to 6·56. In the other two patients inspite of a subnormal pH at the time of the test, recovery ultimately occurred, and when these patients regained consciousness the pH had increased to 7·36 and 7·39 respectively.

Ketonuria—It has been pointed out by several investigators that pregnant women, and more so cases of toxæmia are prone to ketosis. However, most authors have used the terms ketosis and acidosis of pregnancy somewhat synonymously. It has been seen that the acidosis of pregnancy and pre-eclampsia is of the nature of a compensated alkali deficit, without any alteration of the hydrogen ion concentration of the plasma. A consideration of the problem of ketosis in toxæmia in relation to the status of the carbonic buffer system may prove interesting.

1. *Spontaneous Ketonuria*—In order to study if normal pregnancy under ordinary living conditions give rise to ketosis, 482 specimens of fresh urine obtained from the antenatal clinic and belonging to patients in the last trimester of gestation were examined for the presence of ketone bodies. In 5 specimens (1·03 per cent) the test was positive. However, the quantity observed was nowhere more than a mere trace. In all cases the urine was obtained 2 to 3 hours after the mid-day meal, and consequently the question of starvation acidosis was ruled out.

Similar examination was carried out in 269 cases of pre-eclampsia. Of these 93 had severe toxæmia, and 176 were mildly toxic. The incidence of ketonuria in these cases was 1·14 per cent (2 cases) in mild, and 4·30 per cent (4 cases) in severe toxæmia. In mild toxæmia the blood pressure was between 140/84 and 150/100. They had a varying amount of albuminuria, ranging from 0·5 to 3·5 parts (Esbach). The degree of œdema also showed considerable variation. Of the 2 patients who had ketonuria, one had B.P. 145/96; alb. 2·5 parts and + + œdema. The other patient had 7 parts albumin in the urine, + + + œdema, and a B.P. of 148/100. In severe toxæmias the blood pressure varied from 155/105 to 220/135, albuminuria ranged from 2·5 to 16 parts (Esbach), and œdema was variable. The 4 cases of ketonuria had: (*i*) B.P. 165/112, Alb. 6 parts, Oedema + + +. (*ii*) B.P. 170/120, Alb. 3 parts, Oedema + +. (*iii*) B.P. 170/116, Alb. 5 parts, Oedema + +. (iv) B.P. 198/118, Alb. 8·5 parts, Oedema + + +. The quantity of ketones in the urine varied from a trace to +.

Twenty-nine cases of eclampsia were also examined before any treatment was adopted. The interval between the last convulsion and the time of collection of urine varied from a few minutes to 2 hours. Ketonuria was detected in all cases. No correlation was found between the number of convulsions and the degree of ketonuria. In fact, one patient who had 6 fits had only a trace of acetone in the urine, yet in 2 patients who had only 2 fits each, the urine was loaded with acetone. The degree of coma appeared to have some relation with the amount of ketonuria present. An analysis is presented below. In order to present an undistorted picture no attempt has been made to submit the average values.

No.	*Degree of coma*	*No. of cases*	*Ketonuria* ±	+	+ +	+ + +
1.	0	4	3	1	—	—
2.	±	6	3	3	—	—
3.	+	8	—	5	3	—
4.	+ +	6	—	—	2	4
5.	+ + +	5	—	—	—	5

In three fatal cases of eclampsia, at the pre-terminal stage (7 to 12 hours before death) the urine was loaded with ketones and gave a positive reaction to diacetic acid.

2. *Induced Ketonuria*—In a smaller series of normal and toxæmic pregnancy an attempt was made to induce ketosis by a short period of starvation from 6 P.M. till 10 A.M. on the following morning. The meal preceding the starvation period consisted of 4 ounces of bread (toasted), 1 ounce of golden syrup and a pint of milk. During the period of investigation only drinks of unsweetened black tea, and water were allowed. Such a short fast seldom, if at all, induced ketonuria in non-pregnant individuals. The experiment was done on 20 cases of normal pregnancy and 38 cases of severe pre-eclampsia. Of these, 1 case of normal pregnancy (5 per cent) and 6 cases of toxæmia (15·2 per cent) showed the presence of ketone bodies in the urine. In the case of normal pregnancy and in 5 out of the 6 cases of toxæmia the reaction was only slightly positive. In the remaining case of pre-eclampsia the test was moderately positive (= 1+). It is interesting to note that during the 48 hours following the test, the toxæmia in the last patient aggravated markedly and labour had to be induced. At this stage her urine was not free from acetone even in the post-absorptive stage.

The plasma pH and alkali reserve were estimated in these 7 patients. The data are presented in Table 4. It will be seen that slight ketonuria in either normal or toxæmic pregnancy does not disturb the acid-base balance of the blood to any appreciable degree. The total carbon dioxide combining capacity of the plasma in these cases was somewhat less than that in the series already described. However, the difference is not of significance, and this was associated with a proportionate reduction of both combined and free carbonic

acid of the plasma, so that, neither the pH, nor the $H.HCO_3$: $B.HCO_3$ ratio was altered. The ketosis in the patients was attended with a state of compensated acidosis.

TABLE 4—RELATION BETWEEN KETONURIA, ACID-BASE BALANCE, AND HYDROGEN ION CONCENTRATION OF THE BLOOD IN TOXAEMIA

*Cases**	*B.P.*	*Alb.* §	*Oedema*	*Ketonuria*	*Total CO_2*	*Bicarb. CO_2*	*Free CO_2*	$\frac{B}{H}.HCO_3$	*pH*
N. 1.	118/70	...	...	±	49·2	46·95	2·25	20·9	7·43
T. 1.	165/115	7·5	+++	+	44·1	42·05	2·05	20·5	7·41
T. 2.	170/100	3·0	++	±	48·6	46·26	2·34	19·8	7·40
T. 3.	160/100	2·5	+	±	47·7	45·53	2·17	21·0	7·44
T. 4.	180/110	5·0	+++	±	48·0	45·71	2·29	20·0	7·41
T. 5.	170/105	1·5	+	±	49·0	46·62	2·38	19·6	7·41
T. 6.	150/105	4·0	++	±	47·1	44·90	2·20	20·4	7·415

* N = Normal pregnancy. T = Pre-eclampsia. § Figures indicate gms. albumin per litre of urine.

Ketonuria in eclampsia presented a different picture. Here ketosis was attended with a state of uncompensated alkali deficit. The $H.HCO_3$: $B.HCO_3$ ratio was below 1 : 16 in all those cases where ketone reaction was 2+, or more strongly positive.

DISCUSSION

According to the nomenclature suggested in the special report of the British Medical Research Council (1923), the state of alkali reserve in toxæmia of pregnancy comes within the scope of acidosis. However, the condition is not associated with an alteration of either the hydrogen ion concentration of the blood, or the ratio of $H.HCO_3$: $B.HCO_3$. Inspite of the acidosis these are maintained within normal limits. The accepted average pH of the blood is 7·40 (Stirling, 1947). But even normal subjects show considerable variation in this respect. Cullen and Robinson (1925) found that in normal persons the pH may vary between 7·28 and 7·41, and that variations of this value may occur at different hours of the day depending upon the state of digestion and activity. When all these factors are taken into account, the state of the acid-base balance in toxæmia of pregnancy is almost similar to that found in normal pregnancy. In both conditions there exists a state of compensated alkali deficit. The available alkali is slightly less in pre-eclampsia than in normal pregnancy. This would account for the high ammonia co-efficient of the urine observed in toxæmia by Williams (1924), Stander (1930), and other investigators.

The state of the alkali reserve in eclampsia, however, indicates the presence of an uncompensated alkali deficit, which has been named "acidæmia" in the Medical Research Council report cited above. Observations of Hasselbach and Gammeltoft (1915), Bokelmann and Rother (1928), Stander and Cadden (1930), Stander (1934), MacNider (1928) and Dieckmann (1941) also substantiate this. However, the degree of this acidæmia varies considerably, and consequently the range of pH in eclampsia also shows a wide dispersion. Nevertheless, the pH often does not fall below the minimum normal limit mentioned above, and the $H.HCO_3$: $B.HCO_3$ ratio seldom becomes less than 1 : 16. From a prognostic point of view we have found these absolute values to be of little importance, for in the absence of interfering factors, like too frequent convulsions, the pH and the ratio soon return to normal. In 7 cases of eclampsia in this series, the ratio was less than 1: 16 at the time of examination, but none of these cases ended fatally. The decrease of the pH and the elevation of the ratio are, however, closely related to the degree of coma, and in this respect uræmic and eclamptic coma bear some resemblance to each other.

The cause of this uncompensated alkali deficit is not wholly understood. Several authors have reported an increased concentration of fixed acids in the blood of severely toxæmic patients (Bokelmann and Bock, 1926; Stander and Cadden, 1930; Mukherjee and Govan, 1950). But this could not be the only cause, for a similar condition exists in normal individuals after violent exercise. The interfering factors present in toxæmia, especially in eclampsia, beside the one mentioned above are : (*i*) The level of alkali reserve is initially low, (*ii*) During an eclamptic attack there is serious interference with respiratory functions (*iii*) Severe cases of toxæmia, and eclampsia often suffer from marked oliguria, and even anuria (*iv*) The metabolic functions of the liver are grossly upset in pre-eclampsia and eclampsia. This is paricularly noticeable with regard to carbohydrate (Mukherjee, 1952a, 1952b), and fat metabolism (Mukherjee, 1950). All these factors impose a load on the normal mechanism of compensation, which is already in a state of delicate balance.

The ketosis in pre-eclampsia appears to be related more to a disordered carbohydrate and fat metabolism, and does not necessarily indicate a loss of compensation of the acid-base balance of the body. Only in eclampsia this assumes considerable importance, for it causes a drain on the grossly depleted alkali reserve and

contributes to the breaking down of the compensatory mechanism. From this point of view, prevention and early treatment of ketosis in eclampsia is urgently indicated. Ketosis, in eclampsia, unlike that in diabetes, is a secondary factor responsible for the state of uncompensated acidosis or acidæmia.

Summary and Conclusion

The results of a study of the acid-base balance of the body in 14 cases of normal pregnancy, 30 cases of pre-eclampsia and 14 cases of eclampsia are presented. This investigation is supported by the potentiometric estimation of the hydrogen ion concentration of the plasma in a smaller series of cases. The findings indicate that although there is decrease in the alkali reserve of the blood in pregnancy and a greater decrease in toxæmia in both normal pregnancy and pre-eclampsia, the condition is one of compensated alkali deficit. The functional integrity of the carbonic buffer is not upset and the pH of the blood does not deviate from normal. However, in eclampsia, especially in presence of coma and frequent convulsions, the acid-base balance is grossly disturbed and the condition which develops is one of uncompensated alkali deficit or acidæmia. The carbonic buffer system is disturbed, and the pH has a slight tendency to fall.

The investigation also includes a study on ketosis in normal and toxæmic pregnancy. It shows that in toxæmia the tendency to ketosis is increased. In pre-eclampsia this is not attended with a gross disturbance of the buffer mechanism of the blood. It is possible that in eclampsia, ketosis contributes to the failure of compensation which accompanies this condition.

References

Bokelmann, O, and Bock, A.—*Arch. f. Gynak.*, **129** : 541, 1926.

Bokelmann, O, and Rother, J.—*Klin. Wochnschr.*, **7**: 543, 1928.

Cook, F.—*Brit. M. J.*, **1** : 372, 1924.

Cullen, G., and Robinson, H.—*J. Biol. Chem.*, **66** : 30, 1925.

Dieckmann, W. J.—Toxæmias of Pregnancy, Henry Kimpton, London, 1941.

Emge, L. A.—*Am. J. Obstet.*, **77** : 813, 1918.

Gradwohl, R. B. H., and Gradwohl, J. E.—Blood and Urine Chemistry, Henry Kimpton, London, 1928.

Hasselbach, J., and Gammeltoft, S. A.—*Biochem. Ztschr.*, **68** : 266, 1915.

Kyd, D. M., Oard, H. C., and Peters, J. P.—*J. Biol. Chem.*, **98** : 241, 1932.

Losse, J. R., and Van Slyke, D. D.—*Tr. New York Acad. Med.*, December, 1916.

MacNider, W.—*J. A. M. A.*, **90** : 71, 1928.

Medical Research Council, Sp. Rep. No. 72, 1923.

Mukherjee, C. L.—*Glasgow M. J.*, **31** : 70, 1950.

Idem—J. Indian M. A., **21** : 135, 1952(*a*).

Idem—Ibid, **21**: 279, 1952(*b*).

Mukherjee, C. L., and Govan, A. D. T.—*J. Clin. Path.*, **3**: 274, 1950.

Myers, V. C., Muntwyler, E., and Bill, A. H.—*J. Biol. Chem.*, **98**: 253 & 267, 1932.

Nice, M., Mull, J. W., Muntwyler, E., and Myers, V. C.—*A. J. Obstet. & Gynec.*, **32** : 375, 1936.

Oberst, F. W., and Plass, E. D.—*J. Lab. & Clin. Med.*, **26** : 513, 1940.

Osman, A. A.—*Proc. Roy. Soc. Med.*, **27** : 339 & 348, 1933-34.

Schmidt, H. R., and Wingen, T.— *Arch. f. Gynak.*, **133** : 127, 1928.

Slemmons, J. A.—*Am. J. Obstet.*, **77** : 797, 1918.

Stander, H. J.—*Am. J. Obstet. & Gynec.*, **28** : 854, 1934.

Stander, H. J., and Cadden, J. F.—*Bull. Johns Hopkins Hosp.*, **47**: 382, 1930.

Stirling, E. H.—Principles of Human Physiology, J. & A. Churchill, London, 1947.

Vozza—*Ann. di Obst. et Gynec.* **49**: 301, 1927.

Van Slyke, D. D.—*J. Biol. Chem.*, **33** : 271, 1918.

Van Slyke, D. D., Wu, H., and McLean, F. C.—*Ibid*, **56**: 765, 1923.

Williams, J. W.—Obstetrics. Lippincott, New York, 1924.

TUBERCULOUS MENINGITIS*

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Incidence

Visitors to the Byramjee Jeejeebhoy Hospital for Children, Bombay, are struck with the large number of children suffering from tuberculous meningitis. (Table 1).

Table 1—Total Admissions and Tuberculous Meningitis

	1949		1950		1951	
	Total	*T.B.M.*	*Total*	*T.B.M.*	*Total*	*T.B.M.*
Jan. ...	181	13	155	19	178	22
Feb. ...	174	6	143	18	138	16
March ...	212	17	174	15	186	13
April ...	201	6	223	18	149	17
May ...	208	13	265	11	198	13
June ...	229	9	210	21	166	13
July ...	294	11	254	21	205	7
Aug. ...	331	10	261	15	214	17
Sept. ...	206	22	215	20	196	13
Octr. ...	204	19	208	16	146	8
Novr. ...	188	12	176	7	174	14
Decr. ...	184	21	142	10	130	14
	2,611	159	2,426	191	2,080	167
		6·09%		7·8%		8%

* Read at the Scientific Section of XXVIII All-India Medical Conference, Ahmedabad, February, 1952.

Out of the total admissions of 2080 children into the medical wards in 1951, 167 or 8 per cent were diagnosed as suffering from tuberculous meningitis.

Seasonal Incidence—The admissions according to the months were as follows (Table 2):

TABLE 2—ADMISSIONS DURING YEARS 1949-51

		Jan.	*Feb.*	*March*	*April*	*May*	*June*
1949	...	13	6	17	6	13	9
1950	...	19	18	15	18	11	21
1951	...	22	16	13	17	13	13
		54	40	45	41	37	43
Av.	...	18	13·3	15	13·6	12·3	14·3
		July	*Aug.*	*Septr.*	*Octr.*	*Novr.*	*Decr.*
1949	...	11	10	22	19	12	21
1950	...	21	15	20	16	7	10
1951	...	7	17	13	8	14	14
		39	42	55	43	33	45
Av.	...	13	14	18·3	14·3	11	15

From the average of these three years it appears that the lowest admissions have been in May and November and the highest in January and September. In this industrial city where houses were not built nor are maintained in hygienic conditions, where overcrowding, poverty and illiteracy abound, we have all the favourable conditions for the spread of tuberculosis. Therefore, it is not surprising that the incidence of tuberculous infection is very high in the children below five years of age in Bombay.

CONTACT

History of contact—A history of contact was obtained in 29 cases (Table 3).

TABLE 3—HISTORY OF CONTACT

Siblings	...	14
Parents	...	15
Total	...	29

Economic group and Meningitis—The monthly income of the parents of 168 out of 216 children was below Rs. 100/-. (Table 4).

TABLE 4—ECONOMIC GROUP

Less than Rs. 50/- per month	33
Rs. 50/- to Rs. 100/-	135
Rs. 101/- to Rs. 200/-	42
Rs. 201/- to Rs. 500/-	6
	216

Age and Sex—At least fifty per cent of children of this age, if not more, show clinical, radiographic, or allergic evidence of this infection (Table 5).

TABLE 5—AGE AND SEX INCIDENCE

Ages	*Boys*	*Girls*		
0- 6 months	10	4		
7-12 months	21	29		
13-24 months	52	31	Total Number	270
2- 3 years	24	16	Boys	154
3- 4 years	15	17	Girls	116
4- 5 years	14	8	Infants	147
5- 7 years	12	6	Below 6 months	14
7-10 years	4	2		
10 and above	2	3		
	154	116		

Glands, lungs, and bones are affected but affection of the meninges is the most serious Boys and girls are about equally affected by tuberculous infection of the meninges. In this series there were 154 boys and 116 girls. One hundred and forty-seven were infants and of these 14 were below six months of age. Strangely seventy of them were the first born and forty two second and fifty one, third children (Table 6).

TABLE 6—PLACE IN THE FAMILY—TOTAL 249

1	2	3	4	5	6	7	8	9	10	11	12	13
70	42	51	33	19	14	5	7	4	2	0	1	1

DIAGNOSIS

The diagnosis is, of course, based on the symptomatology and physical signs. The classical description of a prodromal period followed by a stage of irritation and paralysis is well known. But both in hospital and in consulting practice, one meets the patient generally in the late stage. In this series, 60 died within 24 hours of admission, 50 between the first and the fifth day, and 19 between the 6th and 10 day of admission. Thus 129 out of 270 children died within a few days of admission. It is possible that in a well organised and adequately staffed out-patient department all these cases could be detected early but our departments in hospitals are understaffed and some of these cases are missed. The general practitioner has a great opportunity of diagnosing these cases early. In our plan for raising the cure rate, early diagnosis should get top priority.

Invasion of the meninges may be insidious. During this period the child if older will have lost interest in his daily activities and he is inclined to sit apart and appear moody. He may also lose his appetite. With these symptoms it is difficult to think of tuberculous meningitis unless there is a marked hilar flare or infiltration in the lungs or there are matted glands. It is only the last condition that may be apyrexial, but in the previous two conditions, there is fever, either at the time of presentation or a

few days earlier. In this apyrexial stage a positive Mantoux test may be of use if the transition from the negative to the positive phase has been recent. But this aid is practically non-existent as our follow-up is poor and Mantoux testing is limited. A useful symptom is vomiting, unrelated to intake of food, when it is added to apathy and anorexia . Its value is greater in the older child, because in infants vomiting may occur from very trivial causes. 81 children had vomiting. When the triad of apathy, anorexia and vomiting, is present, examination may reveal a boggy fontanelle, and sometimes dilated pupils reacting sluggishly to light and perhaps a squint. It is surprising how often the parents fail to notice this squint. I have quite often heard them says, "Yes doctor, now that you say so, it is there alright. But I did not notice it before." All this time there may have been no fever at all, or there may be fever with vomiting and squint. If the fever is absent at the time of examination it does not take long to appear. Rigidity of the neck may be present with fever, or with vomiting alone. The degree of spasm varies and a personal factor always comes in in its assessment. At this stage a definite diagnosis of meningitis can be arrived at.

In a second type of onset a child may be brought to you for recent drowsiness preceded by low irregular pyrexia for some weeks. 95 children had prolonged fever, and 39 came with drowsiness. On screening there may be only slight enlargement of hilar shadows. With this mode of onset there is no difficulty in suspecting an involvement of the central nervous system.

More often the child is brought for convulsions with fever. The fever may have come only with the convulsions, or it may have preceded them. It is the convulsion, not the fever, that alarms the parents and makes them seek immediate medical help. 131 children gave a history of convulsion and 30 were unconscious on admission, 7 had tremors, 33 had paresis or paralysis. Yet, the convulsions may be merely an episode. There may be convulsion and fever of about two days duration. The cerebrospinal fluid may be normal or the cells may be very slightly raised, and there may be no paralysis. The child goes home apparently well. Such children should be kept under observation. Those that ultimately develop the full picture of tuberculous meningitis may come two or three times with these episodes of convulsions and fever.

TABLE 7—SYMPTOMS ON ADMISSION

Acute fever	124	Irritability	16
Prolonged fever	95	Vomiting	81
Acute cough	28	Drowsiness	39
Prolonged cough	31	Tremors	7
Wasting	8	Convulsions	131
Constipation	26	Paresis or paralysis	33
Diarrhoea	26	Unconsciousness	30

The child with convulsions and fever may progress favourably with the pathological condition. If he regains consciousness there may be a hemiplegia, or monoplegia or paralysis of one or more cranial nerves. The oculomotor group of nerves is most commonly affected, causing changes in the size and reaction of the pupils, affecting the movements of the eye-ball, and producing ptosis. The facial nerve may also be affected, causing facial palsy. But, in my experience, bulbar paralysis is very rare.

After the diagnosis of involvement of the meninges has been made on the physical signs and symptoms, its nature may be suspected by the evidence of tuberculous infection in the glands, lungs or bone. But the nature of the infection can be clinched only by the examination of the cerebrospinal fluid. Till recently we laid great emphasis on the diminution of the chlorides, but now this emphasis has been shifted to the reduction in the amount of glucose. When the chlorides fall below 600 mgm. per 100 c.c. and the lymphocytes are increased, one is on fairly safe grounds in diagnosing tuberculous meningitis. In 128 cerebrospinal fluids examined on admission, there was a "cobweb coagulum" in 83, and increased tension was noticed in 75 per cent of cases. The chlorides were between 600 and 650 mgm. per 100 cc. in 50 children, and below 600 mgm. in 36 children. The sugar was absent in 37 and diminished in 68 fluids. There were more than 10 lymphocytes in 110 fluids, and 63 of these had more than 50 cells per c.mm. Only one patient had a xanthochromic fluid. A definite diagnosis can be arrived at by finding the tubercle bacillus in the c.s.f. or by guinea-pig inoculation. In my experience of nearly 25 years a laboratory report with this finding is very rare. Guinea-pig inoculation has not been possible with the limited resources of our laboratories. However, the observations made by my colleague Dr. Bhulabhai Patel are interesting. He has in collaboration with the Haffkine Institute cultured the cerebrospinal fluid of 22 patients who died with a clinical and cerebrospinal fluid picture of tuberculous meningitis and also inoculated guinea-pigs with them. The cultures were all negative and only two guinea-pigs showed tuberculous meningitis lesions. I am aware that these results may be criticised from various angles but our position regarding an accurate diagnosis needs further consideration.*

Another finding of great diagnostic value is the presence of choroid tubercles. They have been seen very often at autopsy ; but we do not get autopsies. During life I have seen them on very few occasions in patients who were clinically diagnosed as tuberculous meningitis. This has been the experience of my other colleagues as well.

Occasionally a patient has all the cerebrospinal fluid findings of purulent meningitis. He is treated for it and he responds to treatment and when you think every thing is going on smoothly, the cerebrospinal fluid

* If a specimen of c.s.f. proved to be negative both by cultural and animal inoculation method, the child was not possibly suffering from tuberculous meningitis —ED., *J. Indian M. A.*

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changes and the findings are those of tuberculous meningitis. All these patients ultimately succumb with a full-fledged clinical picture of the latter infection.

Treatment

Before the advent of streptomycin, tuberculous meningitis meant certain death ; even now with the use of this antibiotic my experience in the hospital has been very disappointing. American and English pediatricians report ten to fifteen per cent recoveries. The object of this paper is to inquire into experiences of other physicians and consider how we can improve our results.

The specific treatment of tuberculous meningitis is now with streptomycin dihydrochloride and para-aminosalicylic acid. The treatment has to be continued for a period of not less than six months. The cost of streptomycin has come down, and the antibiotic is within the economic ambit of many a middle class person. The cost of treatment has been further reduced as the antibiotic has to be injected only once a day, which means only one visit of the doctor. Even then it strains the purse of all but the wealthy. Amongst this series of hospital patients only 123 received streptomycin, and many for too short a period. It is true that death ended the scene in many, but a large number of the patients could not buy sufficient quantities of the drug. Our hospital does not supply streptomycin free to the needy except in rare cases and even then only in "token" quantities.

Streptomycin is administered intramuscularly and intrathecally. The dose for the intramuscular injection is 20 mgm. per pound of body weight per day, given once a day. This should be given continuously unless otherwise indicated. The intrathecal dose is now less than what was suggested when the antibiotic was new. We now use 10 mgm. per day for six weeks. The route for intrathecal administration is a matter of selection. Because of the thick exudate at the base of the brain, adhesions may be formed at the base or elsewhere on the surface of the brain. This will prevent the circulation of the cerebrospinal fluid and of the antibiotic, and the latter may not reach the base of the brain where most of the tubercles are found. Hence cistern, or ventricular puncture or trephining of the skull is suggested. We have no experience of trephining. We have tried ventricular puncture and are now trying the cistern puncture. One will have to wait for the results. I have no experience with streptokinase. In one of my patients in whom it was used in a very late stage, it was of no use. After an interval of a month, streptomycin must be repeated again for a month intrathecally, and a further course is indicated after an interval of two months. None of my hospital patients have had such courses. Nearly all of them died before this period was reached. In practice outside hospitals, lumbar punctures in children, particularly in infants is not usually done, as many general practitioners shrink from performing a lumbar puncture. I can assure you that this is a very simple procedure. Hence streptomycin is mainly administered intramuscularly. By this route it must be administered for at least six months. Since the introduction of streptomycin dihydrochloride, the dreaded complication of blindness and deafness are not seen. Sometimes one meets with a skin rash, but this is not serious. When improvement occurs the temperature subsides, the child regains consciousness and the cerebration improves gradually. The spasticity diminishes. The changes in the cerebrospinal fluid lag behind.

Para-aminosalicylic acid must be used along with streptomycin to support its action and further to prevent the *Mycobacterium tuberculosis* from becoming resistant to the antibiotic. This drug is given orally. One of the undesirable effects is the loss of appetite that follows the administration of para-aminosalicylic acid. Of late, I have been using neutral calcium para-aminosalicylate (P.A.C.). The dose has been 1 gm. per 10 pounds of body weight per day. When the child is unconscious the powder or the crushed tablet should be given with food by gavage. The period of administration is the same as that of streptomycin.

Maintaining the nutrition of the child and preventing dehydration are important aspects in the management. A conscious child should be coaxed to eat, and food should be varied to rouse the appetite. There is no restriction as to the form or type of food to be offered. With an unconscious child nourishment has to be administered by gavage and this naturally limits the form and type of food. The caloric value of the food and its fat and protein content can be increased by using sweetened condensed milk, protein hydrolysate, egg yolk or olive oil. Dehydration should be corrected by the administration of fluids by gavage, subcutaneously or intravenously in requisite amounts. Patel advised repeated blood transfusions. I have no experience of this.

This results with streptomycin with various workers have been increasingly encouraging. From a hundred per cent mortality it has now come to 90 to 85 per cent. In our series 121 received streptomycin intramuscularly, and 80 intrathecally. Of these, 81 died in hospital, 13 died within 24 hours after admission and a total of 59 died within 20 days, 11 died between 21 and 30 days, 3 died between 31 and 50 days and 3 between 51 and 60 days. 35 left the hospital in a bad state. 7 left the hospital in a conscious state, but were irritable, and had rigidity of neck; only in one child the general condition was good. These children received streptomycin from 11 to 120 days.

If I may digress from this hospital series to my experience outside in private practice, I feel the results are still unsatisfactory. I can count six recoveries in these three years. Two of them were alive and were in such a bad mental condition that I felt sorry they were alive. I have lost contact with the other four. My colleagues in general practice have expressed their

disappointment in the results. The treatment is long drawn out, the parents are always hopeful, you dare not stop the treatment, but ultimately the patient dies in nearly all cases. Yet, though at the time our results are bad, I am hopeful that in future years our percentage of recoveries will rise. I end this with an appeal for early diagnosis and early treatment.

LUNG SYNDROME OF EOSINOPHILIA

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Introduction

Frimodt-Moller and Barton (1940) described in detail this syndrome under the heading "Pseudo Tuberculosis with high Eosinophilia." This was followed by an identical description by Weingarten in 1943. In the same year Simeons independently described the same condition. Duing this period Chakravarty and Roy (1943), Chaudhuri (1943) and Treu (1943) reported a few cases. In 1944 we find a description of the disease with notes on 19 cases by Treu. Vishwanathan (1945) published a paper of his 85 cases from an Indian General Hospital (Military). Isolated cases were reported from Australia, Middle East and other parts of the world. After the article by Vishwanathan this present series was collected, particularly with a view to understand the etiology of the disease, the collection being from the routine blood examinations for clinical purposes. No special investigations were made nor any special study undertaken.

The author's series consists of 74 cases of eosinophilia observed upto July 1951. The condition was distributed as follows:

Lung syndrome (eosinophils—10%-73%	...	59 cases
Chronic asthma (eosinophils—10%-16%)	...	4 cases
Filariasis (eosinophils—20%-28%)	...	2 cases
Chronic bronchitis (eosinophils—12%)	...	1 case
Data incomplete	...	8 cases

Family history—In this series the following family histories have been noted:

A history of tuberculosis was found in 6 cases. In 2 cases the mother died of the disease. In 2 cases brothers died of the disease. In 1 case two daughters had the disease, of whom one died and one is alive.

Four patients gave a history of asthma in one or the other parent.

A history of diabetes was found in one case in the parent.

Personal history.—Previous attack of dysentery was noted in one and pneumonia in two cases. Eosinophilia was noted in both mother and daughter in the family noted above where the tubercular attack in the daughter is reported. Asthma was recorded in six cases. Tuberculosis was found in one case. Allergic rhinitis was noted in one case. In another case both maternal uncle and his nephew living in the same house had the disease.

Incidence and Etiology

Sex.—There were 28 males, 29 females, one male child and one female child (both below 12 years).

Communities.—Patients from all communities have been suffering from the disease.

Habitation.—All except one were from the District, 44 patients being from towns and 15 from villages which are within 60 miles of the coast line.

Diet.—42 are strict vegetarians and 17 are mixed diet eaters, non-vegetarian being usual.

Age—The highest age recorded is 56 years and lowest is 10 years, the average being 22·5 years.

Profession.—No special vocation was found to have any influence.

Climate.—There has been no relation between the appearance of the disease and climate

Symptoms and Signs

Besides the classical symptoms some unusual symptoms are noted. A classification of the findings is given below. The reports of some interesting cases with unusual symptoms will be given later.

Fever.—Usually low, sometimes intermittent was found in 46 cases.

Heaviness of the chest.—This complaint which is marked at night particularly, was found in 46 cases.

Disturbed sleep.—This was fairly common and was noticed in 45 cases.

Patients had to get up at night with slight or marked constriction of the chest, dyspnœa and cough. This was marked in the early hours of the morning. The cough was sometimes productive and sometimes unproductive, the sputum being mostly frothy in character.

Hard breathing.—Present in 45 cases particularly at night after rest in bed for some time. With this appeared the wheezing sound in some.

Abdominal distress.—This was found in 15 cases. One patient started all her trouble with abdominal distress which she described as ascending into the chest to give rise to hard breathing and wheezing.

Anæmia.—This was diagnosed clinically and was found in 50 cases varying in degree from slight to severe.

Albuminuria.—Three patients had heavy albuminuria and persistent dyspnœa until the urine cleared up.

Enlarged liver.—Present in two cases.

Heart embarrassment.—This was present in one case. The syndrome was a periodical missing of a systolic beat in the cardiac cycle, sometimes followed by an extra-systole. In some cases tachycardia was present.

Rheumatism.—This was the only symtom in one case, there being no lung syndrome at all. The case will be described later.

Neuralgia and myalgia of chest.—These two cases are reported.

The other symptoms described by other observers such as loss of appetite and weight, general weakness and lassitude, were present in most of the cases.

Investigations

The only investigations that were carried out were examination of the blood in all cases for a differential count, sptum in a few cases without any T. B. being present and routine examination of the urine.

Blood.—Eosinophilia was found in all cases ranging from 10 to 73 per cent, the average being 35 per cent for all the 59 cases. Though it was arbitrarily decided that counts 20 per cent and above were to be considered as giving rise to the eosinophilic syndrome, I have seen definite symptoms in patients with eosinophilia as low as 10 per cent, the result of treatment also confirming the diagnosis.

Urine.—Albuminuria with a thick cloud was found in three cases. All the three cases cleared up under digitalis treatment after which the syndrome was treated.

X-ray.—This was done in a few cases only. The usual mottled appearances were observed.

No other investigations were carried out.

Treatment

The treatment is commenced with giving the patient an anthelmintic, my preference being for ol. chenopodium with magnesium sulphate. Then the specific treatment for the condition is begun. Arsenicals in different forms were and still are the only drugs that relieve the syndrome. In the early days acetylarson was used by me at weekly intervals. When this drug was not available, Mapharside 0·04 with 500 mgm. of vitamin C intravenously at weekly intervals was used. In cases where the patient could not be given or refused injections, carbarsone was used in the following dose schedule:—One pill twice daily for three days followed by one pill daily for the next seven days. This was to be taken every month for three to four months. Later, carbarsone was continued twice daily for ten to twelve days without any side effects. The usual care of constant urine examination for albumen cannot be stressed too strongly, whenever arsenicals are used, particularly parenterally. Multivitamins, iron and calcium preparations were administered to improve the anaemia and the general condition.

Only one case, reported below, showed marked allergy to arsenicals. Beyond this no other side effects occurred. Yet it must be pointed out that parenteral arsenic should be given at intervals of not less than six to seven days to avoid any side effects or undesirable reactions. Almost every brand of Carbarsone was used with uniform results.

Results of treatment.—One case became chronic as she got attacks of abdominal distress followed by hard breathing, relieved immediately by administration of Carbarsone.

Three cases had recurrence of symptoms and blood picture once only.

One case was so bad that nothing relieved him. He developed bronchitis and passed off before treatment could be completed.

One case with albuminuria recovered fully. But she passed away about seven weeks later. The other two patients recovered completely. Both of them had attacks subsequently, one, one year later, with all the old symptoms. This is reported below. The other had it only a month back but without albuminuria. Both are quite well now.

The rest have recovered and are carrying on their daily avocations and have not returned with a recrudescence of their symptoms. Most of these are under observation still.

Case Reports

Case 1—K. R. N., Hindu, male, 16 years. In September, 1946, the patient was seen by me for fever, pain in the joints, particularly the knees and small joints of the feet. The pulse was fast. Nothing was found in any other system. He was given the usual iodide salicylate mixture and injections of rheumatism phylacogen which brought the temperature range to between 99° and 100°F. morning and evening. There being no further relief at the end of two weeks, his blood was sent for routine examination. There was 33 per cent eosinophilia and no other abnormality. Acetylarsan injections were immediately started. After the first injection the temperature came down to normal and remained so. After a full course, the boy was allowed to attend school. He had no recurrence. In 1949 he had an attack of filarial glands during which time a study of the blood picture did not show any eosinophilia.

Case 2—Mrs. S. N., Hindu, female, 34 years, mother of six children, was treated for asthma four years previously by another medical man with injections of Soamin. When seen by me she had hard breathing, very productive cough, disturbed sleep, wheezing and loss of weight. On examination, occasional rhonchi were heard in both lungs and a few rales during the day. But at night she had an exacerbation of symptoms. Blood picture showed 63 per cent eosinophilia. With arsenicals she recovered fully. She had two subsequent deliveries. There was slight recrudescence in one of the subsequent confinements. With carbarsone she was relieved completely. One of her daughters had the same trouble with tuberculosis later.

Case 3—Mrs. N. B., Hindu, female, 16 years, daughter of Case 2, during her first pregnancy in June, 1947.

developed asthma-like breathing, severe cough, sleepless nights and became progressively weak. On examination she was found to be slightly anæmic, there was dyspnœa even on slight exertion and productive cough. On examination rhonchi of all descriptions and a few rales at both bases could be heard. A hæmic murmur was heard in the pulmonary cardiac area. The blood picture showed 62 per cent eosinophilia. The urine showed no abnormality. A course of Mapharside 0·04 gm. with 500 mgm. vitamin C at weekly intervals cleared up the condition. The pregnancy terminated normally. A month after the delivery in March, 1948, she started diarrhœa, fever, cough and became progressively weak. On examination the right apex was found to be consolidated, the sputum showed A.F.B., the abdomen was tender and painful, diarrhœa being marked after meals. A skiagram of the chest showed a patch of infiltration at the right apex. The blood did not show much of eosinophilia. She was admitted into the Government Tuberculosis Sanatorium, Tambaram, from where she returned after a year. On her return she was getting A.P. injections. During this period she had the old attack of eosinophilia. She was again treated with injections of Mapharside with vitamin C. and got complete relief. She had a second pregnancy since, delivered normally in February, 1951, got a recrudescence of her tubercular condition and an intercurrent attack of typhoid fever, from all of which she recovered and is now in fairly good health.

Case 4—Mrs. K., Muslim, female, 38 years, mother of six children, ever since 1939 had been under my treatment for cough, weakness and low temperature She was treated with calcium injections, tonics and a change of air. She was all right for two years. She again complained of weakness in 1943. This time with liver extract and calcium she showed some improvement. She had two deliveries subsequent to 1939. But the following symptoms persisted.

A sensation of fullness in the abdomen, distension with gas, pressure on the chest followed by dyspnœa, persistent cough and general weakness. Though the menstrual history was regular, she still felt that there was trouble with her uterus. So she was sent over to Madras in 1945 for further investigations at Stanley Hospital. After a thorough investigation she was found to be suffering from eosinophilia for which she was prescribed acetylarsan injections. The eosinophilia was only 27 per cent at Madras. While she was under my treatment in 1946, the third injection was given in the morning at about 10 A.M. In the afternoon at 4 P.M., she suddenly got high temperature, dyspnœa, fast pulse, red in the face and a feeling of impending death. I found her practically prostrate in the above condition. An injection of 0·5 c.c. adrenalin followed by calcium intravenously gave her relief and she felt better. This is possibly one of the Herxheimer reactions or a sensitivity to arsenic. Subsequently similar reaction to carbarsone showed that this was only arsenical sensitivity. She was administered carbarsone capsules only and parenteral arsenic was stopped. Once she took a carbarsone capsule in the morning and went out on some work when she had to work in the hot sun till about 3 p.m. She got the same symptoms as noted above, which was relieved by calcium tablets. Subsequent to this she was taking carbarsone capsules on a full stomach followed by milk and never stirred out of the house during the administration of the drug. Her eosinophilia was never less than 16 per cent. She had to take carbarsone constantly to keep her free from the symptoms which started with abdominal distress. This is the only case which became chronic.

Case 5—K. V. P., male, Hindu, 30 years, came in October second week, 1948, with the following condition:

Fever ranging between 99° F. to 101° F., dyspœa, wheezing, productive cough with plenty of frothy mucus, inability to sleep, scanty urine, inability to take or retain any food and marked general weakness of two week's duration.

On examination the following was noted: a fairly nourished individual, dyspnœic, unable to sleep, incessantly coughing. Liver slightly enlarged, pulse between 110 and 120 p.m., urine scanty and contained albumen, there were rhonchi and rales in the lungs but no consolidation. Temperature was as above. Under digitalis, diuretics and expectorants the urine cleared, temperature came down and liver enlargement disappeared but the cough and dyspnœa persisted. The blood picture showed eosinophilia of 52 per cent. Acetylarsan was started and gave immediate relief. Three injections were given followed by Neosalvarsan 4 injections of 0·15 gm. Iron tonics and multivitamins were also administered. By January, 1949, the patient attended to his work.

About the end of 1949 he again developed the same symptoms and this time the quantity of albumen was greater. I was called in again in the third week of January, 1950. The same treatment was instituted with the addition of a mercurial diuretic. His blood picture at this stage showed 28·5 per cent eosinophilia. Under arsenicals he cleared up and is now attending to his work without any trouble.

In this case I suspect that the heart of the patient is showing commencement of myocardial degeneration, though I have not been able to confirm my suspicion yet.

Case 6—Mrs. R. V., Hindu, female, 32 years, villager, was brought to me in February, 1950 with the following complants: fever, dyspnœa, cough with expectoration, marked anaemia, loss of weight and general weakness. She was a nullipara and came from a malarial area.

On examination she had enlarged liver and spleen, urine loaded with albumen, pulse between 110 and 120 p.m., marked dyspnœa. The lung condition showed rhonchi and plenty of rales without any consolidation. The liver and spleen were palpable. The blood picture showed 35 per cent eosinophilia. There were no malarial parasites. Under appropriate treatment including mercurial diuretics her albumen cleared up. This was followed by arsenicals which completely relieved her of her lung symptoms. She came to me again in June, 1951. She was very much better in her general health and the blood showed 24 per cent eosinophilia. She was advised a second course of arsenicals. But she suddenly died from an attack of coronary thrombosis seven weeks before any treatment could be started.

Case 7—Mr. J. M. F., male, Christian, 27 years, came from Bombay with pain in the chest and back increased by deep breathing coming on in spasms, dry cough and general weakness of four months' duration. Except for slight anæmia, nothing could be detected. A routine examination showed an eosinophilia of 15 per cent. As he was unable to take parenteral arsenic and as the case was considered a mild one, he was prescribed carbarsone one tablet b.d. for ten days. A fortnight later he returned and reported that he felt much better, having been completely relieved of his pain. At the end of five weeks he had put on some 10 lbs. weight and left for Bombay with instructions to continue the treatment.

Case 8—N. M. S., male, Hindu, 31 years with a previous history of an attack of poliomyelitis with sequela in right leg muscles came for the following complaints:

Continuous pain in the right side of the chest in the axillary region coming on to the front, cough and weakness. The cough was marked at night disturbing his sleep and was unproductive.

On examination the patient was anæmic, and very pale. He was fairly well nourished. His lungs showed very few signs except occasional rhonchi. A hæmic murmur was present in the cardiac pulmonary area. No other abnormality was found. Blood examination revealed 19 per cent eosinophilia. Mapharside 0·04 gm. with 500 mgms. vitamin C was given with dramatic results. After six injections the patient is quite well. The pain in chest cleared only after the fourth injection. He has taken carbarsone for two months for 10 days at a time. He is the maternal uncle of Case 1. Both live in the same house.

Discussion

Nomenclature—The disease has been variously termed as 'eosinophilic lukæmia,' 'pseudo-tuberculosis with high eosinophilia', 'eosinophilic lung' and 'tropical eosinophilia'. After a survey of the literature so far published and taking into consideration all the symptoms and signs reported, the lung condition is common in all cases and is the one that points to the presence of the eosinophilia. I venture to suggest the term 'lung syndrome of eosinophilia.' This seems to be the appropriate name for the disease, as the disease has been reported from various parts of the world even where tropical conditions do not exist, though tropical conditions may predispose patients to the disease in a very large measure.

Though the condition was first described by the staff of the Arogyavaram Tuberculosis Sanatorium, in their able analysis of 175 cases, they were of opinion that none of the patients were either tuberculous nor were the two diseases co-existent. Of the other authors only Treu reported one case in which a tubercular lesion was found subsequent to the clearing up of the eosinophilic condition. In this series one case is reported in which both the conditions co-existed, the eosinophilic condition supervened and cleared up with appropriate treatment, while the tuberculous condition was still being treated.

Weingarten and Vishwanathan reported their cases only among males due to the circumstances under which they were working. Treu has not seen a single female case. Frimodt-Moller and Barton (*loc. cit*) gave a ratio of 4:1 for males and females. In this series which is entirely from civil life in a general practice, males and females are more or less equal. So the sex incidence can be taken to be equally distributed and the influence of sex on the incidence of the disease is negligible.

The influence of diet has not been mentioned by any of the other authors. This series gives a ratio of 3:1 for vegetarians and non-vegetarians. But this requires further investigation.

Weingarten was of the view that seaside climate alone had everything to do with the incidence of the disease. But other authors have reported cases from all parts of the country. In this series the ratio of town dwellers (mostly in Mangalore) to village dwellers is 3:1. So most authors agree that seaside climate is not the main factor causing the disease and the influence of seaside climate is not very necessary in the incidence.

Tuberculous or asthmatic history in the family seems to have very little influence as far as present knowledge is concerned. Both in this series and that of Treu, two members of the same family had the disease, Treu reporting in one family, while in this series it was found in two families, on a mother and daughter and one maternal uncle and nephew. Further work will have to show whether the disease is familial in nature.

Etiology.—Various theories have been formulated for the causation of the disease. Frimodt-Moller and Barton (*loc. cit.*) consider that this condition may be allergic in origin due to a domination of eosinophils in the picture but further opine that there may also be other factors which give rise to the disease. Treu considers that allergy alone cannot explain the syndrome. The fact that arsenicals relieve the symptoms dramatically gives rise to doubt about allergy being the main cause. Carter, Wedd and d'Abrera (1944) have found mites in the sputum of some of these cases and opine that these may in part be the cause of the disease, as relief is obtained by arsenicals. Carter and d'Abrera (*loc. cit.*) carried out experiments on Toque monkeys with mite eggs, introduced into the trachea and injected subcutaneously. In the tracheally introduced animals cough and eosinophilia which persisted, were noted. In the injected animals only transient eosinophilia was noted. They have not given any conclusions of their work. Treu (*loc. cit.*) considers that this postulation of the cause is very difficult to establish, due to the technical difficulties in proving the presence of these mites. Vishwanathan (*loc. cit.*) suggests the cause to be a virus infection. All the authors noted above and subsequently Menon (1945) of the Pasteur Institute, Coonoor, Balbir Singh (1948) of Jamshedpur have reported that the blood gave positive Wassermann and Kahn reactions in a few cases but not all. Menon (*loc. cit.*) carried out an experiment to find out whether infection is the cause of the disease. He obtained a specimen of blood from a patient and within 6 hours of its being taken from the patient inoculated in two guinea-pigs with two controls who were inoculated with blood from a healthy person and blood from an asthmatic respectively. After careful recordings of the data for ten days, the first two guinea-pigs showed eosinophilia. These were killed and on a post-mortem of the animals with sections of the lungs being examined, he is reported to have seen the typical eosinophilic condition. But he is not prepared to postulate from this one experiment.

In this series no attempt has been made to find out the actual cause of the disease. The notes have been brief. Only the factors influencing the disease have been noted. For obvious reason no experimental work

could be undertaken nor was it carried out. So I have not ventured to give an indication of the causation of the disease. Under the conflicting evidence on record as noted above, the question must be kept open for future workers to decide. Suffice it to say that both allergy and infection may have their due share in the etiology of the disease.

Prognosis.—The percentage of relapses so far is negligible. Where the heart and kidney had shown damage and where a tuberculous infection supervened, there has been one relapse in each case. Only one case has become chronic whether from a psychologic cause or otherwise, it is difficult to assess. All these cases are under observation. In some a second count has shown only a marked diminution. Future events will show the relapse ratio. As far as present knowledge is concerned, prognosis is always good and the patient can be assured of relief.

Complications.—Amir Chand and Gupta (1947) have reported a case with marked melæna which almost cost the patient his life. The cause of this cannot be given. This is reported to caution the practitioner to remember this as a complication which is unusual and also one of the causes of melæna. No complication has been noted in this series.

Conclusion.—The disease is more common than it is thought to be. The causation is not known. The treatment is very simple and effective. The present series reported have given some new points in family history, incidence, familial heredity and symptomatology. Future workers will be able to define the etiology of the disease and its prevention.

Suggestions for future work.—Having had some experience, the author has been unable so far to give a more detailed description of the different aspects of the disease. The following suggestions are made with regard to future work:

1. A detailed family history is to be recorded in every case to find out allergic conditions, familial incidence and other aspects of heredity.

2. A detailed personal history of previous diseases suffered by the patient to find out the influence of such disease is to be recorded.

3. Environmental conditions of each patient is to be recorded.

4. A detailed record of symptoms and signs has to be maintained.

5. Investigations of different aspects of the blood and other laboratory investigations such as blood and sputum cultures have to be carried out.

6. Work of Dr. I. G. K. Menon of inoculation experiments of the blood from these patients to find out the causation and all allied investigations may give fruitful results.

7. Above all, the field worker that is the independent medical practitioner who has all the facilities to observe, record and follow up cases, and the laboratory worker must join hands in the investigations not only of this entity but also in the investigations of diseases which have yet to be worked out.

The author has always been of opinion that in our country the co-operation between the field worker and the laboratory worker is essential. Mutual co-operation and co-ordination between workers in different fields can achieve results. Problems there are in plenty to be solved. Any amount of clinical material is available. Workers are there. It is only recording of the observations by the field worker, investigations by the laboratory worker and a review with co-ordination of the results by both that is required. The author appeals with all the earnestness that he can command, as he always has been doing ever since the inception of the Medical Associations, for mutual help and co-operation between all sections of workers. It is to be earnesly hoped that this will be forthcoming in an ample measure in the future, so that our country may be placed on par with the advanced countries, in giving the results of original investigations on hitherto unexplored problems.

Summary

1. A review of 74 cases of eosinophilia has been given in which 8 cases could not be reported.

2. Eosinophilia in filariasis has been noted.

3. An analysis of the family and personal histories has been given of the 59 cases of lung syndrome of eosinophilia.

4. The incidence under different headings have been given.

5. The symptoms have been analysed and unusual ones noted.

6. A discussion on the etiology with up-to-date literature available has been presented.

7. Suggestions for future work which may yield fruitful results have been made.

Acknowledgment

All the blood examinations were carried out by Dr. V. P. Kamath and Mr. V. R. Kouvekodikar with patience and thoroughness. I place on record my grateful thanks to both for the unstinted help and co-operation extended by them to me.*

References

Carter H. F., Wedd G., and D'Abrera, V. St.E.—*Indian M. Gaz.*, **79**: 633, 1944.

Chakravorty, U. N. and Roy, S. C.—*Ibid*, **78**: 596, 1943.

Chand, Amir, and Gupta, Devichand—*Indian M. Gaz.*, **82**: 402, 1947.

Chaudhuri, R. N.—*Ibid*, **78**: 575, 1943.

D'Abrera V.St.E. and Stork, R. K. G.—*Ibid*, **81**: 282, 1946.

Editorial—*Ibid*, **78**: 599, 1943.

* From a lecture delivered at a meeting of the South Kanara Branch of Indian Medical Association on 22-9-1951.

EMERSON, K.—*U. S. Naval Med. Bull.*, **42**: 118, 1944.
FENNER, J.—*Medical J. of Australia*, **2**: 7, 1943.
FRIMODT-MOLLER, C. AND BARTON, R. M.—*Indian M. Gaz.*, **75**: 607, 1940.
LAL, R. B.—*Ibid*, **80**: 30, 1945.
MENON, I. G. K.—*Ibid*, **80**: 24, 1945.
SHAH, R. S.—*Ibid*, **78**: 597, 1943.
SIMEONS, A. T. W.—*Ibid*, **78**: 171, 1943.
SINGH, BALBIR—*Ibid*, **83**: 77, 1948.
TREU, R.—*Ibid*, **78**: 70, 1943.
TURNER, J. C.—*Ibid*, **1**: 765, 1943.
VISHWNATHAN, R. AND NATARAJAN, B.—*Lancet*, **1**: 148, 1945.
VISHWANATHAN, R.—*Indian M. Gaz.*, **80**: 392, 1945.
WEINGARTEN, R. I.—*Lancet*, **1**: 103, 1943.

CHLOROMYCETIN IN ENTERIC FEVER*

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The discovery of chloromycetin is an important milestone in the progress of medical science. It appears to be a step further towards the cure of typhoid fever—which has so long baffled all attempts in finding an effective therapeutic agent to produce a specific bactericidal action on the causative organisms of enteric fever. Experimental studies have shown that chloromycetin inhibits the growth of *Eberthella typhosa*.

The clinical improvement and the complete transformation of the clinical picture in a few days can only be appreciated fully by clinicians, who had the previous experience of typhoid fever and had known their helplessness in the past to arrest its protracted course. In this new antibiotic we have the specific cure of typhoid fever.

The beneficial results obtained by the chloromycetin in typhoid fever by Woodward *et al* (1949) have been amply confirmed by a large number of workers. We have been able to give trial to this new antibiotic in only a small number of cases of typhoid and paratyphoid fever. The prohibitive price of the drug keeps it beyond the reach of the common man in our country.

ANALYSIS OF THE CASES

The diagnosis of cases treated with chloromycetin was established by blood culture or Widal test. Two cases of typhoid fever were treated on clinical diagnosis.

Number of cases treated	...	15
Typhoid fever	...	13
Paratyphoid fever	...	2

Age—The age of patients treated with chloromycetin varied from 8 years to 30 years, average being 17·8 years.

Sex—Out of the 15 cases, 10 were males and 5 females.

Only two cases were inoculated with T.A.B. vaccine. There was history of contact in one only, her husband died of typhoid fever.

Dose—No definite dose schedule was followed in this series of cases. But the patients can be classified into three groups according to the actual dosage employed.

Group 1—In this group, comprising of four cases, the drug was given in the dosage as recommended by Woodward *et al.* (*loc. cit.*) *i.e.*, 50 mgm. per kg. body weight as the initial dose, followed by 0·25 gm. 2-hourly, till the temperature came down to normal and a maintenance dose of 0·25 gm. every 4-6 hours till a total dose of 18 gms. was given.

Group 2—Three cases were given chloromycetin in the following doses:

0·5 gm. 3-hourly for first 24 hours (4 gms.).

0·5 gm. 4-hourly on the second day (3 gms.).

0·5 gm. 6-hourly for a variable period, as judged by the therapeutic response and more on the financial position of the patient.

Group 3—In the remaining cases, more or less similar dose schedule was followed—

0·25 gm. every 3-4 hours on the first day (1·5-2 gm.).

0·25 gm. every 4-6 hours, till the temperature came down to normal (1-1·5 gm.).

0·25 gm. every 6-8 hours, for a variable period (1-0·75 gm.).

Total dose—The total dose given in this series varied from 6-18 gms.

With our observations limited to 15 cases of enteric fever, treated with chloromycetin, we cannot recommend any particular dose schedule. Limited supply and the poor financial condition of the patients had been our handicap, which did not permit us to stick to any particular dosage.

Treatment was started in the first week in 3, in the second week in 4, in the third week in 3, in the fourth week in 2, in the sixth week in 2, and in the eighth week in 1.

RESULTS

The real value of the drug can only be assessed when it is started early in the disease (Bradley, 1949). Our number of cases is too small to throw much light on this point. All that we deduce is that, except where chloromycetin had no effect, it produced equally good results, irrespective of the stages when treatment was started.

* Paper read at the XV U.P. State Medical Conference, Moradabad.

Pyrexia—The average days of pyrexia, after the start of chloromycetin therapy was 4·3 days in the first week; 3·6 days in the second, 4·0 days in the third, and 3·3 days after the third week. This shows equally good response in all the weeks.

The temperature chart is the main objective guide to the patient's response to the treatment. On an average defervescence occurred rapidly and the temperature became normal in 72-96 hours.

Our observation is that the chief effect of chloromycetin is on the temperature, which usually settles by rapid lysis but toxæmia takes longer to disappear. We very commonly found that the temperature settled, but the patient continued to be in a 'typhoid state' for another 12-18 hours, though in some with the fall of temperature, toxæmia disappeared equally effectively and rapidly. In none of our cases was the effect more marked on the constitutional symptoms than the temperature.

After starting the drug, nothing happened for 24-36 hours. In two cases the range of temperature went higher and the general condition grew worse in the first 48 hours. After 36-48 hours, in nearly all the cases the temperature settled by rapid lysis and the toxæmia gradually improved.

The minimum time in which the temperature touched normal, in our cases, was 36 hours and maximum 120 hours, average 62·4 hours. In four cases there was a secondary rise, the range was between 99°-100°F If settled, the next day in three, in the fourth it took three days to finally settle down.

In two of our cases there was a rise of temperature, without the return of symptoms and signs of the disease, after an afebrile period of 9 days. The range of temperature was lower and it touched normal in 3 days and 5 days respectively. Treatment was started on the 7th day and 15th day, the total dose given was 15 gm. each, covering apyrexial period of 6 and 7 days respectively. In one, relapse occurred. The cause of these small rises in temperature remained obscure.

Duration of fever after the institution of chloromycetin therapy—The average duration of pyrexia, in this series, was 3·7 days, the shortest was 1·5 days and longest 5·5 days.

Toxic effects—Chloromycetin seems to be non-toxic for all practical purposes (Murgatroyd, 1948; Shah, 1949; Vakil, 1949).

In our series of 15 cases, toxic symptoms occurred in 7. The common ones were nausea, vomiting and anorexia. Retention of urine occurred in one. Transitory erythematous rash with slight itching appeared in one case. (Musotto, 1949 and Patel *et al*, 1949 refer to eczematous skin rashes).

We came across peripheral vascular failure in two cases. It occurred after 48 hours in one, after she had been given 7 gms., while in the other it occurred after 60 hours when 4 gms. of the drug had been given.

In the first case, the dose was reduced to one capsule 6 hourly, while in the other it was transitory and was overcome by stimulants.

Complications—It has been shown by Woodward *et al* (*loc. cit.*) that chloromycetin does not prevent the occurrence of intestinal hæmorrhage and perforation even in the afebrile period of the disease. Vakil (*loc. cit.*), Musotto (*loc. cit.*), Rankin *et al* (1950) and Ramli (1950) also came across such complications in their series.

Intestinal hæmorrhage occurred in one of our cases treated with chloromycetin on the 12th day of disease in the pyrexial phase, which proved fatal.

In another case of paratyphoid fever treated with chloromycetin, pneumonia and peritonitis occurred on the third day of treatment, during the pyrexial phase, followed by empyema later on.

Relapse—Relapse occurred in 3 cases (20 per cent), after an afebrile period of 15 days, 15 days and 20 days respectively, average 16·6 days. The duration of treatment was 11·5 days, 11 days and 10 days, average 10·5 days, the period of apyrexia covered by drug was 6 days, 6 days and 7·5 days, average 6·5 days. The total dosage given were 15 gms., 14 gms., and 12 gms. respectively, average 13·6 gm.

It is strange to note that relapse occurred in all the three cases, in whom the treatment was started in the first week and in which the duration of treatment was 10·5 days (average) covering 6·5 days (average) of apyrexia, longest periods over which drug was given in this series of cases.

All the three, who relapsed were treated again with chloromycetin and responded equally well. The temperature settled in 108 hours, 96 hours and 48 hours respectively, average being 84 hours.

The probable cause of relapse may be that the drug does not reach gall-bladder and intestinal contents in sufficient concentration and thus the bacilli which have survived during the main attack, when the body was freed from the chloromycetin, way was open for a fresh invasion by the bacilli from the intestine or gall-bladder.

Perhaps we would have prevented the occurrence of relapses in our cases if treatment would have been continued further, and a higher total dose given.

Two cases—one of paratyphoid A and the other of typhoid fever, who were treated with chloromycetin, did not show any drug-induced response. The treatment was started on the 15th and the 36th day of illness, the drug was given for 7·5 days and 7 days, with a total of 15 and 12 gms. respectively. It was discontinued as there was no response

Two cases, clinically typhoid fever but negative bacteriologically, were treated with chloromycetin. They responded to chloromycetin in a similar manner as observed in positive cases.

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Discussion

This brief paper has been presented in the hope that it will elicit discussion from the learned members of the profession. The points on which the experience of other members would be useful to give this drug its proper place in the fight against typhoid fever are the following :—

1. The optimum dose and whether it should vary with the severity of the case and the day on which treatment is instituted or a uniform dose could be instituted in every case.

2. Are there any dangers of giving big doses?

3. Is it desirable to bring down the temperature with quick lysis or gradual lysis extending over a period of 5-6 days?

4. What could be done to prevent relapses—a longer course of the drug or the institution of T.A.B. vaccine in small doses during the period of convalescence.

These are some of the points which have been engaging our attention and the experience of other members would be most welcome and helpful to us.

References

Bradley—*Lancet*, 1 : 869, 1949.
Murgatroyd—*Brit. M. J.*, 1 : 851, 1949.
Musotto—Quoted by *Brit. M. J.*, 2 : 919, 1949.
Patel, *et al*—*Brit M. J.*, 2 : 908, 1949.
Ramli—*Lancet*, 1 : 618, 1950.
Rankin—*Ibid*, 1 : 650, 1950.
Shah—*Indian J. M. Sc.*, July, 1950.
Vakil—*Indian Phys.*, 8 : 185, 1949.
Woodward, T. E. *et al*—*J. A. M. A.*, 141 : 129, 1949. Quoted by *Brit. M. J.*, 2 : 918, 1949.

PRACTITIONERS' CORNER

INFECTIVE HEPATITIS*

With an account of epidemic incidence in Nagpur, Madhya Pradesh

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Introduction

Infective hepatitis was formerly known as catarrhal jaundice. It occured sporadically. Recently there has been a considerable increase in the incidence of the disease in India. During the last World War epidemic outbreaks of this disease were reported from the middle east.

* Paper read at the Madhyapradesh Medical Conference on 14th November, 1950.

Etiology

It is now accepted that infectious hepatitis is caused by a virus and is infectious; spread may occur by droplet infection from the nasopharynx and flies possibly carry the infection from excreta to food. It has been my experience that the incidence rises when flies are most abundant *i.e.*, in the month of August and September in Nagpur.

It is thus possibly a fly-borne disease as well. I have also noticed the spread of the disease from child to child when they play together—droplet infection.

Epidemiology

Infective hepatitis has been noticed all over India and it has been found in an epidemic form in Nagpur also. Misra reported its incidence in an epidemic form in U.P. in 1949. It is during the monsoon that the disease is most prevalent; of course, it can be found sporadically in other seasons as well. It was noticed in Nagpur in epidemic proportions in the latter half of the monsoon during the last two years. The ages varied widely *i.e.*, from 1½ to 30 years but most of my cases were in children and a few in adults. No cases occurred in extreme old age. The disease was prevalent in the crowded areas of the city. Its incidence was less marked in the more open localities. The incubation period was 30-35 days.

Pathogenesis

The disease can be classed as toxipathic hepatitis (Himsworth, 1948). The pathological lesion in acute stage starts as a centrilobular necrosis of the liver. Within 2-3 days from the onset of symptoms the liver becomes enlarged and tender. In ordinary cases the symptoms of the infection soon subside, the enlarged liver decreases in size and the jaundice fades. Not all cases follow this simple course. In some, massive necrosis supervenes which either kills the patient or results in post-necrotic scarring of the liver. In severe fulminating cases massive necrosis of the liver takes place and a fatal result occurs within the first few days of illness.

Clinical Features

1. *Onset—Preicteric stage*: The patient is indisposed, has poor appetite, nausea and vomiting. The patient gets slight chill but no rigor; fever sets in, vomiting becomes more troublesome and marked and is sometimes an obstinate symptom. The patient complains of bad taste in the mouth, malaise and pain all over the body simulating dengue fever.

Icteric stage: This stage is usually seen in about 3-5 days after the onset. The eyes are first noticed to have a yellow colour in the white of the eye. The urine is yellow, the fever and vomiting continue and if the attack is severe, the patient may become drowsy and comatose. In mild cases the range of temperature is between 101° and 102°F; after 3 days it may come

down by crisis. The icteric stage may last for a period of 2 to 8 weeks.

2. *Physical signs*—Positive physical signs in an average case are not many. Icterus and enlarged tender liver are important. The icterus may be light or deep. One of the most noteworthy physical signs is marked tenderness along the costal margin. Heavy percussion along this line may be painful.

3. *Laboratory tests*—(*a*) URINE: Presence of urobilinogen in the early stage of the disease is of great importance. Ehrlich's aldehyde reagent (solution of para-dimethyl-amido-benzaldehyde in concentrated HCl and water)—gives a port-wine colour to the urine. The tests for bile pigment, *viz.*, Gmelin's test and Hay's sulphur test for bile salt are positive in the height of the disease.

(*b*) BLOOD: The total W.B.C. count may be normal or low. There is relative lymphocytosis. The E.S.R. is low or normal in the early stage and may increase in the later phase of the disease. Coagulation and bleeding times are normal in uncomplicated cases. van den Bergh's test is biphasic.

4. *Clinical pictures in different forms*—(a) ABORTIVE TYPE: The patient may have slight fever with chill, nausea and vomiting; he may have a tender and palpable liver; but the attack may not present any further development and subside in 3-4 days. When there is no known epidemic, these cases may be missed. Attacks of abortive type of infective hepatitis in infancy have been regarded by Sherlock as the probable etiologic factor in infantile cirrhosis of the liver.

(*b*) AN AVERAGE CASE: The clinical course of an average case is well-known and need not be described in detail (*vide* Case 4).

(*c*) THE FULMINATING TYPE : It may start as an average case but may take a serious turn after 3-4 days with high temperature. The patient may be irritable and noisy and he may have convulsions or he may be quiet or comatose. Intense jaundice may supervene and the patient may die in cholæmia (*vide* Case 1).

(*d*) CASES WITH ASCITES IN ACUTE STAGE (Himsworth, 1948): Some cases in the course of an epidemic of infective hepatitis may develop ascites within a few days or weeks of the onset of the disease. There is general anasarca. The patient looks seriously ill and is drowsy and apathetic. The condition may be due to (1) hypoproteinæmia, (2) intrahepatic portal obstruction due to swollen liver cells, or (3) failure to destroy the antidiuretic factor (Himsworth, 1948) (*vide* Case 3).

In the case seen by me in a child which recovered completely, spontaneous diuresis set in within a week and the anasarca and ascites gradually subsided and the drowsiness disappeared. The child became lively and playful.

Not all cases recover; those that die show massive necrosis of the liver at autopsy.

(*e*) CASES WITH HÆMORRHAGIC COMPLICATIONS : These are very rare and hæmorrhage may occur in the form of hæmaturia, epistaxis, purpura, bleeding gums etc. (War Office Memoranda on Medical Diseases in the Tropical and Subtropical countries, 1946). Infective hepatitis with jaundice and hæmaturia is to be differentiated from blackwater fever. In one case under my care (Case 2) the hæmaturia was distressing and persisted for about a week in spite of the use of hæmostatics, *e.g.*, hæmoplastin, calcium, vitamins C and K.

(*f*) THE SUB-ACUTE TYPE: This type may pass into a chronic state. The patient may have recurrent attacks of jaundice. The liver remains enlarged and hard. The spleen is enlarged. Liver function tests show failure of liver functions. A coarsely nodular liver is found at autopsy. These cases of chronic type of infective hepatitis are difficult to treat (*vide* Case 5).

DIFFERENTIAL DIAGNOSIS

Malaria (*bilious remittant type*) is difficult to distinguish. Several blood films should be taken before malaria is excluded. The physician may have tried one or two injections of quinine. One of the simple physical signs, *viz.* a 'marked tenderness along the costal margin of the liver' which may even be markedly tender to percussion is characteristically present in infective hepatitis.

Obstructive type of jaundice or surgical jaundice—The urine should be tested for urobilinogen which is strongly positive in infective hepatitis in early stages and is negative in obstructive jaundice.

Amæbic hepatitis and jaundice have to be differentiated from sub-acute state of infective hepatitis.

The fulminating cases in the early stage may simulate *cerebral malaria, black water fever* and *spirochaetosis ictero-hæmorrhagiæ*.

Two types of conditions showing a viral inflammation of the liver and jaundice are now considered akin to infective hepatitis and need differentiation from infective hepatitis. These are (1) *post-arsenical jaundice* (ii) *homologous serum jaundice*.

During the second World War a number of cases of post-arsenical jaundice were noticed. These were at first thought to be due to injurious effect of arsenic on the liver cells. Authoritative explanation (War Office Memoranda on Medical Diseases in Tropical and Subtropical countries, 1946), now given is that these cases were due to imperfectly sterilised syringes or needles. Accordingly, special precautions were taken to sterilize these between two injections and it was found that the incidence markedly diminished.

Post-arsenical jaundice simulates infective hepatitis. The onset is insidious but the course is prolonged and severe and complications more frequent. Mortality is higher than in infective hepatitis.

Homologous serum jaundice was noticed after the injection of products containing human serum, *e.g.*,

yellow fever vaccine (Manson, 1946) of immune serum of mumps or measles or transfusion of blood and dried plasma. Incubation period in yellow fever vaccine jaundice is 60-90 days. It was either due to infective hepatitis virus or some other icterogenic agent present in the serum. When serum was eliminated in the manufacture no further cases were recorded. In serum jaundice the risk is greater in pooled sera than in fresh blood. In healthy but icterogenic donor the growth of the icterogenic agent is arrested by neutralizing substances which are diluted in pooling. Therefore, a trace of virus from a pooled serum is more dangerous than a pint of blood from transfusion. These viruses are still under investigation and it is not yet known whether they are the same as causing infective hepatitis as incubation period in these is different.

Spirochætal jaundice is rare in India and can be recognised by leucocytosis and isolation of the organism.

Prognosis

Mortality reported is about 8 per cent. In the average case the prognosis is good and recovery is the rule. The subacute cases linger on and the fulminating die.

Prophylaxis

Prophylaxis consists of (*i*) isolation and (*ii*) prevention of contamination of water and food by the excreta of the diseased. Droplet infection being possible, isolation of contacts from the crowded localities should be enforced during the epidemic period. Possibility of flies as carriers should be borne in mind and rigid care of the disposal of the excreta of the diseased should be taken. Water-borne infection can only be prevented by protecting the water supply from contamination with fæces and urine of the diseased.

Treatment

As there is no specific treatment all cases were treated symptomatically. Specific treatment with aureomycin has been suggested and reports of its usefulness are awaited.

A resume of the indications for treatment are given below:

1. *To prevent progression of the disease process in the liver*—Rest in bed should be enforced till all signs and symptoms of active disease, *viz.*, fever, icterus and tenderness in the liver have subsided. A convalescence of 2-4 months should be allowed to facilitate recovery.

2. *To prevent multiplication of the virus*—So far no drug has been found to be a specific and medicinal treatment has been symptomatic. Aureomycin has been reported by some to be of use in the early stages of the disease (*vide* Case 6).

3. *Protection of the liver cells from further damage*—The liver cells should be enriched with glycogen to resist toxic effects of the virus and hence high carbohydrate diet is essential. Intravenous glucose 25 per cent 50-100 c.c. and 10-20 units of insulin subcutaneously have been found to be of great use in the disease. Essential aminoacids (methionine) afford protection to the liver cells from fatty infiltration and hence a high protein diet (rich in essential amino acids) is necessary. It is reported that plasma protein or soluble proteins *e.g.*, gamma globin intravenously may help in fulminating cases where hypoproteinæmia develops as a result of hepatic failure.

4. *Symptomatic treatment*—Nausea and vomiting are troublesome symptoms and calomel in fractional doses or gastric sedatives, *e.g.*, bismuth may help. Few drops of adrenaline on ice are worth a trial. Constipation should be relieved by a simple saline but routine use of purgatives is not necessary. Counter-irritants on the liver, *e.g.*, mustard plaster or application of antiflamin are helpful for epigastric pain due to hepatitis. For irritability and convulsions barbiturates or paraldehyde rectally of 1-2 c.c. I.M. are helpful.

5. *Treatment of sub-acute cases*: This is rather difficult. Choline, methionine are useful in chronic cases, as "lipotropes," and diet rich in proteins and carbohydrates should be persisted for a long time.

6. *Treatment of fulminating cases*—Outlook is not hopeful and treatment unsatisfactory. I. V. proteins (gamma globulin) and glucose may be tried.

Illustrative Case Reports

Case 1.—School master, aged 40 years, came to the clinic with the previous history of diarrhœa and indigestion for which treatment was started with bismuth. Four to five days later he came with additional complaints of feverishness and yellowness in the eyes. Temperature ranged between 100° and 101°F. The icteric tinge and diarrhœa with fever continued for about a week. The urine showed bile pigments and bile salts. Stools were white and fatty. The liver and the spleen were enlarged. After about ten days the temperature rose to 105°F and this high temperature persisted. The patient became drowsy due to cholæmia and was delirious. 100 c.c. of 25% glucose I.V. were continued. Fever did not show any sign of abatement. His condition worsened and he died within a week (*fulminating type*).

Case 2.—Anglo-Indian boy, aged 17 years, had attacks of fever with rigor, the range of temperature being 99° to 105°F. Heart, lungs N.A.D. The liver and spleen were palpable. No icterus. Blood examination revealed no malaria parasites. The case was provisionally diagnosed as malaria and two injections of quinine bihydrochloride gr. 5, were given intramuscularly. Quinine by mouth, gr. 4, thrice daily, for four days was also given. On the fourth day he was seen to have developed jaundice and the liver was tender and markedly enlarged. Lungs and heart—N.A.D. The temperature range was between 100° to 100·5°F. Three days later the patient suddenly started hæmaturia. The urine when examined under microscope showed free R.B.Cs. Hæmaturia was very distressing and persisted in spite of use of vitamin C and calcium gluconate and hæmoplastin for a week. It stopped abruptly and the urine soon became free of R.B.Cs. The icterus in the eyes and body continued for three weeks and later on the boy made uneventful recovery* (Case with hæmaturia).

* Blood serum should have been examined for agglutination against leptospira—Ed., *J. Indian M. A.*

Case 3—Male child, aged 5 years, was brought to the clinic for catarrhal symptoms (sore throat etc.). Temperature was 100·5°F. History of fever 2-3 days with complaints of malaise and anorexia. He was given a diaphoretic mixture with tincture cinchona. At this time no icterus was seen and there was no enlargement of the liver. Lungs and heart —N.A.D. The patient was again brought after three days with the complaint of persistent vomiting. On examination the eyes were icteric, the liver was tender and markedly enlarged, lungs and heart—N.A.D. The child looked ill and apathetic. The father reported that the urine was high coloured, and the stools were whitish. None in the family had an attack of hepatitis. But the child came in contact with neighbour's child who was diagnosed as a case of infective hepatitis in the previous week. Symptomatic treatment was started with bismuth and calomel. Child was again, brought to the clinic after four days with swelling on face, extremities, and ascites. Child was very drowsy and disinclined to get up from bed. Intense jaundice was present. Urine examination showed bile salt and bile pigment in abundance but albumen and casts were not present. No intravenous glucose could be given as the upper extremities were swollen and the child was prescribed glucose and high protein diet orally. Aperients were also administered. Four days later the father of the child reported that the child passed copious urine in the night and was active and inclined to play. With the spontaneous diuresis the swelling on the face and extremities disappeared. The urine did not show albumen or casts. After this the child made uneventful recovery within a fortnight. Eyes cleared; stools regained natural colour; urine also cleared; the liver was of normal size with absence of tenderness. (Case with ascites).

Case 4.—Hindu, male child, aged 4 years with history of vomiting, low temperature, restlessness and constipation for about 3 days. No history of contact with a case of infective hepatitis.

On examination icterus seen in the eyes, the liver enlarged and tender, heart and lungs, N.A.D. Urine examined next day. Urobilinogen, bile salts and pigments in fair quantities, stools white and fatty.

The case was diagnosed as one of infective hepatitis and the treatment given was : mild salines, bismuth and calomel in fractional doses. Milk diet and glucose were advised for three days. After the cessation of vomiting he was put on normal diet, *e.g.*, rice, roti and plain dal and milk, no condiments or fats were, however, allowed.

The child made uneventful recovery in about four weeks. The size of the liver diminished and icterus disappeared, the urine cleared of bile salts and pigments. (Average case).

Case 5.—S. K. D., aged 50, came with the history of loss of appetite, nausea and feverishness for about a week.

Examination—icteric tinge in the eyes, furred tongue and constipation. Liver was markedly enlarged and tender; spleen, heart, lungs—N.A.D.; urine—urobilinogen, bile salts and pigments in fair quantities, stools—white and fatty.

The case was diagnosed as one of infective hepatitis and the treatment given was mild salines daily, glucose I.V. 25 c.c. with vitamin C 100 mgm., once a day for a week and liver extract 2 c.c. daily in the following week; and on alternate days in the 3rd week.

He was also put on high protein diet—milk, liver soup and protinules in milk and glucose orally, one ounce per day and sweets. Only high protein diet and high carbohydrate diet carried on for four weeks. No change of icterus in eyes. The liver continued to be enlarged and tender. No appetite or taste for food.

Second month of treatment. Changed to acid N.M. dil. 10 drops twice a day before meals. High protein diet with fish, meat, milk. Protinules with glucose in milk continued for four weeks further; he felt some appetite with acid N.M. dil. The icterus faded and the liver remained enlarged but the tenderness diminished. Urine contained urobilinogen and bile pigments and bile salts in traces.

Third month of treatment—same treatment and diet as during the second month.

Blood picture showed secondary type of anæmia into R.B.C. 35,00,000 per cmm and Hb—65%.

Urine report—no urobilinogen or bile salts or pigments present.

Additional treatment—Liver extract injection 5 c.c. on alternate days for one week, and iron orally—ferri et ammon. citras 10 grains twice daily for a fortnight. Meonine 2 tablets twice a day (30 tablets).

Fourth month of treatment—Acid N.M. dil. continued. Liver soup orally. Allowed his usual diet except condiments. Appetite fair. Liver felt enlarged by one finger in the epigastric space even after four months of the attack. The patient joined duty. In this case the acute stage continued for two months and subacute for two months.

Case 6.—D. H. female child was brought to the clinic for vomiting and temperature. Had no liver enlargement. Symptomatic treatment was given. Two days later the father reported that the child had slight temperature in the night only. Following day the child was examined, had yellow eyes, enlarged liver, urine showed bile salts, had white stools. Advised aureomycin 1 capsule of 250 mgm. divided into 4 parts 1 part every 1 hour. After three days of treatment yellowness of the eyes disappeared and the liver enlargement diminished. Night temperature also disappeared. Made uneventful recovery within ten days.

References

War Office Memoranda on Medical Diseases in Tropical and Subtropical Areas. 1946. 8th Ed., pp. 134, 140 & 141.

Price—Text Book of Medicine, 1946 Ed., pp. 246, 721 & 721a.

Himsworth—Lectures on Liver and its Diseases. 1948, Ed., pp. 106-109 & 125-127.

Manson—Tropical Diseases. 12th Ed. 1946. pp. 341-347.

OBSERVATION ON THE ANTIBACTERIAL PROPERTIES OF GARLIC*

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According to Chopra (1933) garlic has been said to be useful in many external infections and internal diseases. Tokin (1943) in his studies of phytoncides showed the antibacterial, amœbicidal and fungicidal

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properties of garlic and suggested its use as a therapeutic agent. By using alcohol and chloroform, Cavallito and Bailey (1944) and Rao (1946) isolated an antibacterial substance called allicin which is bacteriostatic in high dilutions. The use of allicin as a chemotherapeutic agent is the subject for future study. The present work was directed to study the antibacterial properties of garlic with a view to determine the nature and usefulness of the antibacterial substances present in it. After removing the scales garlic was crushed and pressed in a small hand press and the liquid thus obtained was used as "garlic juice" in the following experiments.

Bacteriostatic Action of Garlic Juice

The inhibitory action of garlic juice on bacterial growth was tested by making double dilutions of Seitz filtered juice in 2 c.c. of peptone water (2 per cent) medium. A precipitate appeared in the tubes with higher concentration of garlic juice when this was added to peptone water for doubling the dilutions. This precipitate, however, quickly settled down leaving the supernatant fluid clear. A loopful of a 24 hours broth culture of the organism to be tested was inoculated in the clear supernatant fluid of these tubes. The results were read after 24 hours' incubation at 37°C. Incubation under anaerobic conditions was necessary for organisms of the Clostridium group. The tube prior to the one which showed visible turbidity was taken as the end point of the bacteriostatic action.

On account of the formation of precipitate, organisms (like some strains of hæmolytic streptococci) which do not produce general turbidity and give a granular growth at the bottom could not be tested by this method. Hence the inhibitory effect of garlic juice on strains of hæmolytic streptococci was tested by incorporating garlic juice in blood agar plates. The result of incorporation of garlic juice in liquid and solid media is shown below :

Table 1

Garlic juice incorporated in	*Concentration in % found inhibitory for*	
	Staphylo. aureus	*Hæmolytic strepto.*
1. Broth	1·5	—
2. Serum broth	1·5	—
3. Nutrient agar	3	—
4. Blood agar	6	3

Table 1 shows that a higher concentration of garlic juice was required to inhibit the growth of bacteria when it was tested in solid media and in the presence of blood. It may be mentioned that the bacteriostatic activity of garlic juice varied only slightly in different experiments and the above figures are averages. No variation was observed in antibacterial properties of different specimens of garlic obtainable at different periods of the year. If pure garlic juice be taken as 100 per cent, the concentration in which the fresh garlic juice was found inhibitory to the growth of some of the common organisms was found to be as follows—

Organism	*Garlic Juice %*
Salmonella typhi	1·5
Vibrio choleræ	1·5
Staphylococcus aureus	1·5
Shigella dysenteriæ	1·5
Bacterium coli	3·0
Streptococcus fæcalis	3·0
Proteus vulgaris	3·0
Pseudomonas pyocyaneus	6·0
Corynebacterium diphtheriæ	5·0
Diphtheroids (from ulcers)	3·0
Hæmolytic streptococci	0·8
Streptococcus pneumoniæ	3·0
Clostridium welchii	1·5
Clostridium tetani	3·0
Bacillus subtilis	3·0

Bactericidal Action

For testing the bactericidal action garlic juice in varying concentrations was added to 24 hours' broth cultures of the organisms and the culture bottle was left at room temperature for 24 hours. It was then tested for any viable organisms in a suitable liquid or solid medium. The lowest concentration of garlic juice in a culture which did not show any growth on subculture was taken to be bactericidal for the particular organism.

On several occasions 24 hours' broth cultures of *Salmonella typhi*, *Vibrio cholerae*, and *Bacterium coli* were rendered sterile by adding sufficient garlic juice to make a 10 per cent concentration but the results of bactericidal action of garlic juice were not found to be consistent. A 10 per cent concentration sometimes failed to kill *Salmonella typhi* and failed on several occasions to kill *Bacterium Coli*. *Staphylococcus aureus* was not killed by 50 per cent though in some experiments even 10 per cent was bactericidal. *Corynebacterium diphtheriæ* were killed by 50 per cent while other diphtheroids were not affected by this strength. Garlic juice was not found to kill the spores of *Bacillus subtilis*.

Solubility of Antibacterial Substance

In order to study the solubility of the antibacterial material in garlic juice and to see if more of it could be dissolved out by water, crushed garlic was mixed with different quantities of water. The result of the anti-

bacterial activity of the different extracts is shown in Table 2.

TABLE 2

Method	Yield in ml. per 500 gms.	Specific gravity	% strength bacterio-static for Staphylo. aureus
1. Direct extraction of garlic juice ...	90	1120	1·5
2. Crushed garlic mixed with equal parts of water ...	580	1075	1·5
3. 2nd extraction of above with equal part of water ...	450	1035	3
4. 3rd extraction with equal part of water	500	1020	6
5. Crushed garlic with 3 times of water ...	1,500	1030	3

Table 2 shows that the water-soluble antibacterial substances did not go totally in solution with first extraction and were dissolved in later extraction or by adding more water initially.

According to Cavallito (*loc. cit.*) and Rao (*loc. cit.*) the antibacterial substance appears to be an oily material. An attempt was made to extract it by pressing a mixture of equal parts of *til* oil and crushed garlic and separating the oil by a separating funnel. Double dilutions of a well-shaken oil in peptone water were used. On standing the oil floated up and left a clear medium below. The results of the bacteriostatic action on *staphylococcus aureus* are charted below—

Crushed garlic and *til* oil equal parts—oil separated (I).
Crushed garlic and oil from I —oil separated (II).
Crushed garlic and oil from II —oil separated (III).
Crushed garlic and oil from III —oil separated (IV).
Crushed garlic and oil from IV —oil separated (V).
Crushed garlic and garlic juice repeated 4 times as above (VI).

TABLE 3

Concn. (%) of extracted oil	Pure oil	I	II	III	IV	V	VI
50	[+]	–	–	–	–	–	–
25	[+]	–	–	–	–	–	–
12·5	[+]	–	–	–	–	–	–
6·34	[+]	–	–	–	–	–	–
3·2	[+]	[+]	–	–	–	–	–
1·6	[+]	[+]	[+]	–	–	–	–
0·8	[+]	[+]	[+]	[+]	–	–	[+]
0·4	[+]	[+]	[+]	[+]	[+]	[+]	[+]
0·2	[+]	[+]	[+]	[+]	[+]	[+]	[+]
Control	[+]	[+]	[+]	[+]	[+]	[+]	[+]

+ Growth – No growth.

Table 3 shows that the antibacterial substance from garlic can be dissolved out by oil. The concentration of active substance in oil reaches to twice the strength in pure garlic juice, but the concentration in garlic juice cannot be increased by treating it several times with fresh crushed garlic (column VI). The demonstration of inhibitory activity in peptone water medium below the oil shows that the antibacterial substance is both oil and water soluble.

VOLATILE ANTIBACTERIAL SUBSTANCES

It is well known that garlic has some volatile substances which can be felt by their action on the nose and eyes when the garlic is crushed. These volatile substances were also found to inhibit the growth of bacteria. When an inoculated plate without cover was kept in a closed jar along with garlic juice in a beaker, the growth was inhibited. A covered culture plate in the same jar showed bacterial growth. In a second experiment air was bubbled through garlic juice and this air was passed through distilled water. The latter acquired antibacterial properties. The garlic juice through which air has been bubbled, was then tested by the dilution method for any loss of antibacterial properties. No appreciable loss could be detected. The observations suggest that at least some of the antibacterial substances in garlic juice are volatile in nature.

STABILITY OF ANTIBACTERIAL SUBSTANCES

Throughout the course of our experiments it was noted that with storage the antibacterial properties of garlic juice deteriorated. The following observations were made on the stability of the antibacterial properties of garlic juice at room temperature and in the refrigerator at 10°C.

TABLE 4

	Refrigerated at 10°C				*At Room Temperature*			
Duration in weeks	*Bacteriostatic % for vibrio cholerae*	*Deterioration %*	*Bacteriostatic % for staph. aureus*	*Deterioration %*	*Bacteriostatic % for vibrio cholerae*	*Deterioration %*	*Bacteriostatic % for staph. aureus*	*Deterioration %*
0	1·2	0	1·2	0	1·2	0	1·2	0
1	1·2	0	1·2	0	1·2	0	1·2	0
2	1·2	0	1·2	0	5·0	75	5·0	75
3	1·2	0	1·2	0	12·5	90	12·5	90
4	1·5	20	1·5	20	12·5	90	12·5	90
9	1·5	20	1·5	20	25·0	95	25·0	95
11	2·5	50	2·5	50	30·0	96	30·0	96
12	5·0	75	5·0	75	40·0	97	40·0	97
13	6·2	80	6·2	80	50·0	97	50·0	97
14	6·2	80	6·2	80	—	—	—	—
16	12·5	90	12·5	90	—	—	—	—
19	50·0	97	50·0	97	—	—	—	—
20	—	—	—	—	—	—	—	—

Table 4 shows that the bacteriostatic activity deteriorated on keeping in spite of the fact that the garlic juice was kept in airtight bottle. At room temperature it kept its antibacterial activity for about ten days and then it gradually became less and less and after three months it had lost all its bacteriostatic action. In the refrigerator at 10°C it kept its activity for two months and then the activity gradually decreased till it was completely inactive in five months. It is perhaps because of this loss of activity that bottled garlic preparations, like Allisatin (Sandoz) and Garlicyl (T.C.F.) which we tested by the above mentioned methods, did not show any antibacterial activity. According to Stoll the active but unstable allicin is produced from the inactive and stable allicin by allicinase on crushing.

Effect of Heating

Garlic juice was boiled for a variable period and was autoclaved. It was then tested for its bacteriostatic action on *Staphlococcus aureus*.

Table 5

	Boiled for			*Autoclaved*		*Unheated*
Garlic juice percentage	*15 min.*	*10 min.*	*15 min.*	*30 min.*	*15 min.*	
50	–	–	+	+	+	–
25	–	–	+	+	+	–
12·5	–	+	+	+	+	–
6·4	–	+	+	+	+	–
3·2	+	+	+	+	+	–
1·6	+	+	+	+	+	–
0·8	+	+	+	+	+	+

+ Growth – No growth.

Table 5 shows that the bacteriostatic activity of garlic juice was gradually destroyed on heating. Boiling for 30 minutes and autoclaving for 15 minutes at 15 pound pressure inactivated it completely.

Effect of Organic Matter

Equal parts of a suspension of fresh fæcal matter and garlic juice were kept for 30 minutes at room temperature and seitz filtered and tested for its bacteriostatic action.

Table 6

	Garlic juice treated with faecal matter			*Garlic juice untreated*		
Garlic juice %	*Staphylo. aureus*	*Vibrio Cholerae*	*Shigella dysenteriae*	*Staphylo. aureus*	*Vibrio cholerae*	*Shigella dysenteriae*
3·2	–	–	–	–	–	–
1·6	–	–	–	–	–	–
0·8	+	+	–	+	+	–
0·4	+	+	+	+	+	+

Observation in Table 6 show that the antibacterial activity of garlic juice remained unaffected in the presence of organic matter like fæces.

Effect of Acids and Alkalies

The pH of fresh garlic juice is 6·5. In order to test the action of acids on the antibacterial properties of garlic juice, 50 c.c. garlic juice was diluted with 20 c.c. N/10 HCl and kept for ½ hour at room temperature. Its pH was then restored to 6·5 with NaOH before testing.

Table 7

	Garlic juice treated with HCl		*Garlic juice untreated*	
Garlic juice %	*Vibrio cholerae*	*Staph. aureus*	*Vibrio cholerae*	*Staph. aureus*
3·25	–	–	–	–
1·6	–	–	–	–
0·8	–	+	–	+
0·4	+	+	+	+

Table 7 shows that dilute hydrochloric acid had no action on the antibacterial activity of garlic juice. When a similar experiment was repeated with N/10 NaOH it was observed that the bacteriostatic activity deteriorated to about 50 per cent during 30 minutes. However, no loss of bacteriostatic action on *staphylococcus aureus* was observed if the pH was adjusted to 7·4.

Summary and Conclusions

1. Garlic juice (fluid pressed out from crushed garlic) exerts a bactoriostatic action on most of the common bacteria.

2. The bactericidal action of garlic juice on common bacteria is not consistent.

3. Experiments suggest that there are at least two antibacterial substances in garlic juice. One is volatile and the other is water and oil soluble.

4. The antibacterial properties of garlic deteriorate on keeping, by heating and in the presence of alkalies. Deterioration is much lower when stored at 10°C. Acids and organic matter do not affect it.

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References

Cavaillito, C. J., and Bailey, I. H.—*J. Am. Chem. Soc.*, 66: 1950, 1944.

Chopra, R. N.—Indigenous Drugs of India, Thacker Spink & Co., 1933.

Rao, R. R., *et al.*—*J. Sc. Indust. Research*, 5B: 31, 1946.

Tokin, B. P.—Microbiology and Epidemiology, Medical Publication Ltd., London, 1943.

TEN YEARS' EXPERIENCE OF THE SUCCESSFUL WORKING OF THE FIRST HEALTH INSURANCE SCHEME AMONGST INDIAN FACTORY WORKERS*

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As early as 1933, the Bata Shoe Factory at Konnagar introduced a scheme of Group Insurance for the staff of the Bata Shoe Company comprising 400 members, including a few Czech Officers, under the able guidance and management of Dr. Ahmad, the Chief Medical Officer of the Factory. The latter had an experience of the working of a similar organisation at Zlin in Czechoslovakia. In the initial stages, the choice to join the scheme was voluntary and a special permission had to be taken from the Government to deduct the contribution of the workers from their salaries. The scheme became increasingly popular because of the various benefits offered to the workers, and by 1939 practically every one of the workers became a member of the society. Since then, the society has grown popular and has been progressing very satisfactorily. The worker gets free treatment either as an in-patient in hospital or as an out-patient. In addition, he gets cash benefit for sickness against a normal contribution.

Table 1 gives a composite picture of the income and expenditure during the ten years 1939-48.

TABLE 1—INCOME AND EXPENDITURE OF THE BATA WORKERS' SICKNESS BENEFIT SOCIETY FOR THE TEN-YEAR PERIOD 1939-48

(Figures in columns 3-9 are expressed to the nearest hundred rupees)

		Main Items of Income			*Main Items of Expenditure*			
Year	*Average number of workers*	*Contribution from company*	*Contribution from members*	*Miscellaneous income*	*Salaries to doctor and staff*	*Salaries to sick members*	*Medicine and medicinal charges*	*Hospital diet*
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1939	3,697	13,800	18,400	1,000	19,300	4,600	5,900	1,100
1940	5,368	57,400	27,200	2,000	21,300	9,700	6,300	1,700
1941	7,899	38,200	38,200	3,100	24,000	15,300	10,800	1,700
1942	7,830	95,700	50,100	7,600	36,400	25,300	25,100	2,200
1943	6,698	70,800	64,300	9,500	51,400	27,300	31,900	3,600
1944	7,457	1,01,100	92,500	9,500	68,900	47,200	35,400	6,000
1945	7,231	1,02,700	1,08,900	8,500	83,000	57,900	41,600	8,800
1946	7,424	1,82,500	1,13,900	8,600	87,000	1,70,300	56,100	13,000
1947	7,502	1,98,900	1,00,300	1,400	77,700	1,78,600	50,400	14,900
1948	7,632	1,24,000	1,14,300	1,800	93,700	3,400	60,500	14,700

Contributions—As can be seen from Table 1, except for two years, 1939 and 1945 the company has all along contributed more than the workers. The rates of contribution by the workers have, however, undergone some change during this period, as shown in Table 2.

TABLE 2—THE CHANGE IN THE SCALE OF THE CONTRIBUTION BY WORKERS TO BATA WORKERS' SICKNESS BENEFIT SOCIETY

Weekly salary of the worker	*Weekly contribution to the fund in 1939*	*Weekly contribution in 1948*
	Rs. A. P.	Rs. A. P.
7/- or less ...	Nil	Nil
7/1/- to 10/- ...	0 1 0	0 1 0
10/1/- to 15/- ...	0 3 0	0 3 0
15/1/- to 20/- ...	0 4 0	0 4 0
20/1/- to 30/- ...	0 8 0	0 4 0
30/1/- to 50/- ...	1 0 0	0 8 0
50/1/- to 100/- ...	1 0 0	1 0 0
100/1/- and above ...	1 0 0	2 0 0

It will be noted from Table 2 that two healthy and welcome changes in the contributions of the workers have been effected during these ten years, *viz.*, (1) reduction in the contribution of the workers drawing Rs. 20/- to 50/- per week, and (2) increase in the contribution of the workers getting more than Rs. 100/- per week. Thus the middle class income group is now being taxed less and the higher income groups more, with benefits remaining equal for all.

Management of the Society—The management of the society was originally vested with the company itself. The Board of Trustees was composed of five members namely, the Managing Director, the Chief Medical Officer, the Chief Accountant, the Chief Secretary and the Chairman of the Board of Directors. With the progress of the society the workers demanded increasingly greater share in the management and today there are eight members in the managing committee, 4 nominated by the company and four elected (? or nominated) by the members of the Mazdoor Union. The chairman is always nominated by the Company and the Vice-Chairman by the Union. Of

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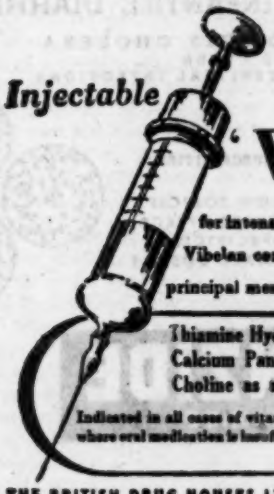

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the two Joint Secretaries, one is from the Company and the other is from the Union.

The Society seems to be very popular because everyone of the workers is a member and the total membership runs to approximately 7,500. Of course Clause 5(*b*) of the Rules is to some extent responsible for the constancy of the membership. It says, "No employee who has once exercised the option of becoming and has been enlisted as a member shall be permitted to resign from the membership of the Society whilst he shall be in the service of the Company. Clause 5(*c*) in addition states," Any member of the Society ceasing for any reason whatsoever to be in the service of the Company shall thereupon cease to be a member of the Society."

Benefits—The various benefits offered initially and their later conditions are of interest. The medical benefit consisted of free medicines to the worker and his family (wife and children) and medical attendence at home in an urgent case for himself and his family if he were to be living in the factory compound or in the Nungi village situated within one mile of the factory. The cash benefit was conditional and the provision was as follows : "In case of sickness, duly certified as hereinafter provided, of members who have completed one year's continuous service under the Company, the Society at its discretion will extend a further help to such deserving member in the shape of contribution up to a maximum limit in a year to half of the respective member's average salary or wage for 14 days"—Clause 16(*d*). For the purpose of this Rule 16(*d*) certification of sickness is of paramount importance. "Sickness or illness of a member was not to be deemed to commence unless he is rendered incapable of doing work duly certified by the Medical Officer of the Society or in case of members residing out of the Company's colony in Batanagar or Nungi village, a certificate of a registered medical practitioner duly countersigned by the Chief Medical Officer of the Society."

The significance of clause No. 16 has been realised by experience of the Company a few years later. After five years of successful working of the registered society the Chief Medical Officer aptly concludes in his Annual Report of 1944 that "in a Health Insurance Scheme such as ours or as it exists in other countries like England, medical certification is the crux of the whole thing—the solvency of the fund would depend on correct certification." The following table brings to light the increasing difficulties surmounted for payment of the cash benefit.

The total contribution to the Sickness Benefit Scheme in any year either from the management or the employees or miscellaneous income is taken as equivalent to one rupee in Table 3. A gradually increasing cost of cash benefit, as seen from Table 3, might have been due either to a gradually deteriorating health of the insured workers or increasing demand of cash benefits from an otherwise healthy community. Sickness records during the years, however, do not indicate a proportional deterioration.

TABLE 3—SHOWING THE COST OF CASH BENEFIT FOR EVERY RUPEE EXPENDED BY THE SICKNESS BENEFIT SOCIETY

Year	Rs.	A.	P.
1939	0	2	2
1940	0	1	9
1941	0	3	1
1942	0	2	8
1943	0	3	0
1944	0	3	9
1945	0	4	2
1946	0	8	11
1947	0	9	6

Since 1947 the Company has deleted Rule 16(*d*). Because of the increasing amount of the sickness salary claimed by the workers, the management has given up cash benefits payments from the Society but has taken up on itself the responsibility of payment of the claims of cash benefits. To prevent absence from work on assumed grounds of sickness, however, the Company gives an additional incentive with two weeks' cash benefit which is paid irrespective of his getting sick.

All the workers in the factory are insured against accidents with a private insurance company and the insurance premia are paid by the Company itself. It is not a charge therefore on the Sickness Benefit Society.

INTERESTING STATISTICS

A. *Pre-employment examinations*—The pre-employment examinations are done as a routine and it is of interest to note that the medical organisation has got five standards, standards AA, A, B, C and D.

AA stands for ... Very much above average "a picture of health."

A stands for ... Above average.

B stands for ... Average.

C stands for ... Below average—Not recommended (The Company can employ the candidate at its own responsibility).

D stands for ... Not recommended (suffering from some active disease). (The Company must not employ the candidate).

Table 4, which follows, gives an idea of the type of working population that gets recruited in Bengal, if Bata Shoe Company is taken as a typical industry.

TABLE 4—SHOWING THE CLASSIFICATION OF ENTRANTS TO THE BATA SHOE FACTORY AT THE PRE-EMPLOYMENT EXAMINATION

	39/40	*40/41*	*41/42*	*42/43*	*44/45*	*45/46*	*46/47*	*47/48*
AA ...	2	2	38	0	3	88	34	38
A ...	69	88	...	41	257	...	...	...
B ...	1394	2908	3945	4470	3972	3733	1148	554
C ...	330	481	1016	853	608	398	110	92
D ...	21	100	27	61	41	23	...	...
TOTAL ...	1816	3579	5026	5425	4881	4242	1292	684

It is seen therefore that during these eight years 2·45 per cent of the applicants for jobs are above average and 82·1 per cent average.

B. *Sickness*—An excellent record is maintained of the various diseases for which the workers come to outdoor dispensary. The following is a table of a typical year's data. In 1940 there were 17,571 new patients and 24,703 old patients. The various diseases are enumerated below :

TABLE 5—INDICATING THE SICKNESS INCIDENCES AMONGST 17,571 PATIENTS ATTENDING THE OUTPATIENT CLINIC FOR THE FIRST VISIT OF AN ILLNESS

Diseases	*Percentage*
Gastro-intestinal	33·2
Respiratory	27·6
Skin	8·3
Eye	7·3
Ear	6·4
Injuries	3·3
Teeth	3·2
Nose	2·9
Exanthematous fevers	1·5
Neuralgia and rheumatic fever	1·4
Malaria	2·8
Filaria and lymphangitis	0·4
Venereal	0·6
Vitamin deficiency	0·6
Others	0·5

C. *Accidents*—In a typical year (1944), there were 2707 accidents ; 27 of them were serious and reportable, 771 slight and reportable and 1909 non-reportable.

D. *Hospital*—It is interesting to note that the Bata Hospital was started earlier than the registration of the Society. On 18th of June 1938, the Bata Hospital started with Bartosova ward of eight beds. By 1944 there were 26 beds and by 1950 50 beds. It is regretted, however, that the scheme of 100-bedded hospital by the management had to be dropped due to extraneous influences. It is, however, interesting to note that the contributions from workers of about half an anna per day and about an equal contribution from the Company are now fairly adequate to cover up, in addition to other expenses, the hospital diet also, *e.g.*, one anna of every rupee of the fund goes towards hospital diet in 1948 whereas in 1939 it was only Re. 0-0-5.

E. *Public Health*—In 1939 when the Society was first started, the Health Officer of the staff was paid from the Society's fund. From the next year onwards, the cost of services and equipment for Public Health Organisation, as a part of Industrial Medicine, is being wholly borne by the management of the Company. Approximately, the annual cost of the Public Health expenditure to-day works out to Rs. 18·94 per capita of the population housed in Batanagar compounds.

F. *Cost of other benefits*—The medical officer's report for the year 1944 gives an idea of the cost of some of the benefits. "Every time a member comes to see a doctor and takes medicine, it costs us Rs. 1·32. In addition to medical treatment we have been paying sick leave salary and as sick pay we have paid an average of Rs. 5·56 per employee per year. The total cost of our services inclusive of sick leave salary works out at an average of Rs 19·45 per employee per year. The contribution made by the employees comes to Rs. 11·39 per head per year or about half an anna per day and Company's contribution of an equivalent amount exclusive of the occasional lump sum contribution from the Company.

SUMMARY

The Bata Workers' Sickness Benefit Society is one of the earliest Health Insurance institutions in India for industrial workers. It has been successfully working for ten years and the experiences are summarised. The worker contributes about half an anna per day and the Company contributes the same amount and as such the worker gets free medical benefit, hospital facilities and cash benefit in case of sickness.

ACKNOWLEDGMENT

The authors wish to acknowledge the permission kindly given by the Bata Shoe Company for abstracting the published report of the Society and gathering the relevant information for this short paper.

BONE IN THE PENIS

T. K. SUBRAMANIAM, (CAPT.)

Coimbatore

On 11th February, 1952, Mr. P. J. (European), 49 years old, came to me for consultation with the complaint that his penis while erect arches backwards, the tip touching the anterior abdominal wall for the last four months. With the present angle of the erect penis he is unable to perform the sexual act.

20 years back patient's penis was hit on the dorsum by a tennis ball. He had difficulty in passing urine from the time of the accident for about three weeks. He had a hæmatoma over the area which was opened two weeks later. The scar of the incision is on the abdominal wall, 2½ inches to the right of the pubis.

Clinical findings: Patient is well-nourished and normal. Penis is of normal size and shape. On palpation the dorsum of the penis from the pubis up to about 3 inches in length and half an inch in breadth involving the middle line and ¼ inch lateral to it on both sides, is very hard to the feel—feels harder than cartilage. Unusual stiff feeling on the middle line from the pubis downwards for a length of 2½ inches. No pain or tenderness except on the lateral sides of the distal 1 inch of the area. Skiagrams of the part—both anteroposterior and lateral views—were taken. Both showed markings of bone 1½ inches by ¼ inch. (Figs. 1 and 2, *vide* Plate).

Treatment: The patient was admitted in a local Surgical Nursing Home where a transverse skin incision 2 inches long was made at the root of the penis, under low spinal anæsthesia. A longitudinal incision 2 inches long was made on the deep fascia, uncovered layers of fibrous tissue were dissected out which exposed the whole hard area, which was removed in one piece. Posterior to the hard area there was a plexus of veins which started to bleed. All bleeding vessels were ligatured, and the wound was closed up in layers. The patient had an uneventful recovery.

Description of the piece of bone removed:—On dissection of the hard mass removed at the operation a long straight bone with a wide base at the pubic end—1½ inches long and 1/10 inch thick—was removed. The bone was covered with periosteum and was looked glistening. There were two more pieces of bone measuring ¼" by ¼" in the centre of the lateral cartilaginous areas.

DISCUSSION

Myositis ossificans of the penis is very rare. The cause of the bone formation in this case is difficult to determine. But with the past history of a trauma, which gave rise to symptoms, this case of myositis ossificans should be considered as traumatic.

ACKNOWLEDGMENT

I thank Dr. C. S. Ramaswami Iyer, L.M. & S., who took the skiagrams and operated on the patient, and permitted me to publish the case.

ACUTE HAEMORRHAGIC PANCREATITIS DUE TO ROUND WORM

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The etiology of acute pancreatitis is still not certain. Various theories have been put forward, commonest of which relates acute pancreatitis to associated gall-bladder disease. It is difficult, however, to explain how a diseased gall-bladder may affect the pancreas, and several explanations have been offered. Regurgitation of bile from the common bile duct into the pancreatic duct as a result of obstruction at the duodenal opening of the common channel has been accepted by many as a possible and suitable explanation. The obstruction may either be due to a stone impacted at the opening or due to a reflex spasm of the sphincter of Oddi, the result of cholecystitis or some other digestive disturbances.

The following case-record supports this theory of regurgitation of bile as a result of obstruction of the duodenal opening of the common channel, the obstructing agent, however, in this case is a round-worm.

CASE REPORT

Patient A. H. aged 25, male, Muslim businessman was admitted to this hospital at 9-30 P.M. on 30-10-51 with the following complaints:

(1) Absolute constipation for 2 days.

(2) Vomiting since the day before (29-10-51).

(3) Severe pains in the epigastrium with profuse perspiration—since 4 days. The pain was colicky in nature at the start.

On examination—Extremely ill patient; body and extremities—cold and clammy; pulse—very feeble, 160 per minute; respiration—shallow and 44 per minute; temperature —98°F (oral).

Abdomen—distension + + and tympanitic; marked tenderness in the epigastric region which was resistant on pressure; liver-dullness—present; no free fluid detected clinically; peristaltic sounds—very faintly recorded.

Diminished breath sounds at both the bases of the lungs.

At 11 P.M. the patient's condition became worse inspite of usual resuscitating measures, the tenderness spreading all over the abdomen and pulse becoming imperceptible.

A bluish stain was then noticed at the left lumbar region.

The patient expired at 12-45 A.M.—*i.e.*, within 3 hours of admission.

A post-mortem examination was held the next morning and the following were found:

Blood-stained fluid in the peritoneal cavity.

The pancreas was hugely enlarged and acutely congested with hæmorrhagic areas distributed all over the gland. On opening the duodenum after taking it out along with the pancreas—one dead round-worm was found to be impacted into the common channel through the duodenal papilla (Figs. 1 and 2, *vide* Plate).

The gall-bladder was found to be apparently normal and no stones were detected in the biliary passage.

It will be seen from the above postmortem findings that there was an obstruction in the ampulla of Vater due to a round-worm and there was no disease of the gall-bladder and biliary passages and apparently the acute pancreatitis followed this obstruction causing regurgitation of bile into the pancreatic duct.

ACKNOWLEDGMENT

I am thankful to Lt.-Col. N. C. Chatterjee, Superintendent, Presidency General Hospital, for his kind permission to publish this case note and to Drs. K. C. Das Gupta and B. C. Banik for kindly doing the post-mortem examination.

KARTAGENER'S SYNDROME WITH BRONCHOGENIC CARCINOMA

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AND
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That more than a single congenital abnormality may occur in the same patient is a fact that is well known to the clinicians.

It was Siewart who in 1904 first noted the association of complete transposition of viscera with bronchiectasis in a 20 year old male patient. Later, brief case reports were published by Oeri (1909) and Guenther (1923). Kartagener in 1933 reported at first four cases, followed later by a further series of seven cases. This clinical condition—transposition of viscera with bronchiectasis—is now known as Kartagener's syndrome. Within the next two or three years Kartagener's syndrome became well-established as a clinical entity. Adams and Churchill in 1937 found that five of the 23 cases of situs inversus totalis admitted to the Massachusetts General Hospital had bronchiectasis of the upper respiratory passages palmonary zone. Olsen (1943) found that out of the 85 cases of dextrocardia admitted to the Mayo Clinic during a period of 27 years, 14 had bronchiectasis, ten of whom of the pulmonary zone.

The case report presented here had complete transposition of viscera (situs inversus totalis), bronchiectasis and primary bronchogenic carcinoma of the right upper lobe of the lung.

CASE REPORT

A Hindu, male, aged 52 years, was admitted on 27th April, 1950, with the history of productive cough and pain over the chest of one year's duration. The cough increased at night. Expectoration was copious, tinged occasionally with blood. There was nothing of significance in the past or family history.

On examination—The patient appeared to be pale, emaciated and undernourished. There was a slight bulging over the right side of the chest anteriorly, with diminished respiratory movements. Vocal resonance and fremitus were impaired on the right side. Apex beat was visible at the 5th interspace, ½ inch medial to the right midclavicular line. Situs inversus was demonstrated by the finding of cardiac dullness to the right of the sternum and liver dullness on the left side. Stomach resonance was on the right side.

No tubercle bacilli were found in the sputum by direct or concentration methods. Smear examinations of the sputum by Papanicolaou technique revealed carcinoma cells in small irregular clusters. A skiagram of the chest (Fig 1, *vide* Plate) confirmed the transposition of viscera, and also revealed a dense homogeneous opacity involving the right upper zone. On bronchoscopic examination the right bronchus was found to be blocked by a growth. A diagnosis of bronchogenic carcinoma of the right lung was made. The patient died suddenly of hæmoptysis on 5th August, 1950, and a post-mortem examination was made.

Post-mortem findings—The right lung—firmly adherent, pleura greatly thickened, smaller in size and collapsed, had two lobes; consistency in upper and middle parts hard. On sectioning, a cavity about 1½ inches in diameter, lined by ragged necrotic tissue, was found in the middle of the upper lobe. The apex of the lung and the areas adjoining the cavity were grossly infiltrated. On dissection, the right bronchus showed a greyish-white, friable, papillomatous growth at a distance of about two inches from the bifurcation of the trachea (Fig 2, *vide Plate*). Bronchiectatic areas were seen towards the lower part (*vide* diagram). The hilar and tracheobronchial lymph glands were enlarged and hard.

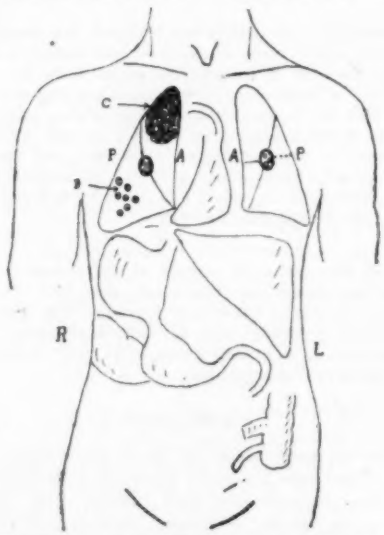

DIAGRAM TO SHOW POSITIONS OF THE VISCERA
C—Carcinomatous area; B—Bronchiectatic area; A & P—Anterior and posterior borders of the lungs

The left lung had four lobes, superior, middle and an inferior lobe divided into two by a transverse fissure (Fig. 3, *vide* Plate).

FIG. 1

FIG. 2

SUBRAMANIAM—*Bone in the Penis*

FIG. 1

FIG. 2

GHOSH—*Acute Hæmorrhagic Pancreatitis due to Round Worm*

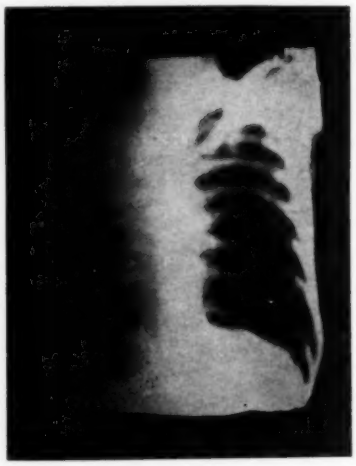

FIG. 1—Skiagram of the chest showing dextrocardia and a dense homogeneous opacity involving the right upper zone.

FIG. 2—Photo showing the carcinomatous (×) area of the right lung.

FIG. 3—Photo showing the 4 lobes of left lung & hour-glass constriction of the stomach (above)

FIG. 4—Photo shows the positions of the viscera *in situ*. Note the complete transposition.

The position of the heart and the blood vessels were completely reversed. The liver was on the left side and spleen on the right.

Stomach—position reversed ; there was a congenital hour-glass constriction of the stomach (Fig. 3, *vide* Plate). The duodenum and the head of the pancreas were on the left, caecum and appendix in the left iliac fossa.

Histopathological section from the bronchial growth showed it to be an anaplastic, oat-celled bronchogenic carcinoma.

In short the abnormalities found were as follows :

(*i*) Transposition of all viscera which were a mirror-image of the normal. (Fig. 4, *vide* Plate).

(*ii*) Bronchogenic carcinoma and bronchiectasis of the right upper lobe.

(*iii*) Four lobes in the left lung and two in the right.

(*iv*) Congenital hour-glass constriction of the stomach (*vide diagram*).

Discussion

The four lobes of the left lung, the hour-glass stomach and transposition of viscera are examples of the purely coincidental association, confirming the statement, one congenital anomaly may mean another as well. The transposition of viscera is due to anomaly of rotation *viz.*, reversed rotation (known as heterotaxis or mirror-imaging). This may be of different types—

1. Simple dextrocardia;
2. Transposition of aortic and pulmonary trunks;
3. Situs inversus viscerum (*i.e.*, complete or incomplete transposition of viscera including the heart).

Andrews (1949) suggested that the bronchiectasis, especially in those cases which have no history of bronchial infection, may be due to congenital defects in the wall of the bronchioles. It is this developmental defect, which for some reason, not easily explainable, is associated with dextrocardia or situs inversus totalis, that is responsible for the clinical entity—Kartagener's syndrome. But why this defect should be only in the upper pulmonary zone, which is the constant site of bronchiectasis in Kartagener's syndrome, is still a mystery. Chronic infection is a potential predisposing cause of malignancy, probably as a result of epithelial metaplasia. The bronchogenic carcinoma in the case reported has probably originated from one of the dilated bronchioles due to the presence of infection and irritation.

Summary

The association of bronchiectasis and transposition of viscera is discussed.

A case in which bronchiectasis, bronchogenic carcinoma and transposition of viscera occurred together is described.

The bronchiectasis is probably due to a congenital weakness in the walls of the bronchioles and the carcinoma due to the constant irritation set up by the infection.

Acknowledgment

Our thanks are due to the Principal, Assam Medical College, Dibrugarh, for permission to publish this paper. We are also grateful to Dr. N. Gupta, Professor of Pathology, for his valuable suggestions and encouragement.

References

Andrews, C. T.—*Brit. M. J.*, 2: 1269, 1949.

Hamilton, Boyd and Mossman—Human Embryology 1947. Heffer & Sons.

Illingworth and Dick—Text-Book of Surgical Pathology, 1947. Churchill.

SUBACUTE SUBDURAL HAEMATOMA

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In treating patients with acute injuries of the head, one of the important signs to be noted is the state of consciousness of the patient. A gradually increasing unconsciousness in a patient previously conscious, means an increasing compression of the brain and such increasing compression is commonly caused by hæmorrhage. As such hæmorrhage can be treated by surgery, the importance of watching for signs of compression of the brain in a patient with head injury cannot be overemphasized.

This hæmorrhage may occur in the plane between the skull and the dura due to rupture of a meningeal vessel. This is called extradural hæmorrhage and is not as common as subdural hæmorrhage where the bleeding occurs in the plane deep to the dura, between the dura and the arachnoid. Subdural hæmorrhage is due to rupture of venous channels that traverse the subdural space.

Clinically, there are three types of subdural hæmorrhage:

a. *Acute Subdural Hæmorrhage*—This occurs at the time of injury from torn veins. This is usually associated with serious intrinsic damage to the brain. The clinical picture points more to brain damage than to brain compression. The patient is unconscious from the time of injury with increasing neurological signs. Surgery has little place in such a group. Rarely acute subdural hæmorrhage alone may occur without brain injury and then it clinically resembles extradural hæmorrhage.

b. *Chronic Subdural Hæmatoma* is at the other end of the scale. Here weeks, months or even years,

after an apparently trivial head injury, the patient develops gradually, headache and drowsiness. He gets inattentive. The degree of drowsiness fluctuates and incontinence of urine is a common finding. There are signs of increased intracranial pressure. The optic discs show œdema. In such a case, the original hæmorrhage gets encapsulated and then slowly swells up and acts like a tumour.

c. In between the above two is the *Subacute type;* here the time interval between the injury and the development of signs is short, about 7 to 10 days. Bad headaches and increasing drowsiness are the cardinal signs. Localising neurological signs may be few or absent. It is to be emphasized here that in all the above types, except the one with serious damage to the brain, a careful watch followed by timely and proper surgery will save many lives, almost from the brink of death.

A case report is presented here of the subacute variety of subdural hæmorrhage.

Case Report

R, male, aged 30, was admitted in early February 1951, in a state of semiconsciousness, with a history of having fallen from a ladder, a few hours earlier.

On admission, the patient was drowsy, but had no neurological abnormality. On the anterior aspect of his head, there was a laceration which was treated. He recovered normal consciousness in about 24 hours and continued to be normal for a week. Then he gradually again became drowsy, during the course of a few hours. This happened during the night and did not draw particular attention till the next morning, when the medical officer noticed his condition and suspected some secondary intracranial lesion and called the neurosurgeon.

On examination, the patient was found unconscious, but he responded to deep painful stimuli. There was early papillœdema in both the eyes. The left pupil was slightly larger than the right and did not react to light direct or consensual, while the right pupil was normal.

On enquiry, the patient in the next bed volunteered the information that the patient had twitchings of the right upper arm. There were no other abnormality.

The plantar reflex was flexor and all other reflexes could be elicited.

The patient was diagnosed as having cerebral compression due to a subacute subdural hæmatoma. Under local anæsthesia a burr hole was made in the left temporal region. The extradural space was clear. The dura was tense and blue. On incising the dura, dark venous blood squirted out for a distance of two feet. The hæmatoma was cleared by the use of a suction apparatus. The bone opening was enlarged all round after enlarging the skin incision. The bleeding seemed to have come from the region of the Sylvian fissure. After clearing this region of clots, gelfoam was applied and the wound was closed. By the time the bandages were applied, the patient had recovered so much consciousness that he was able to tell his name when asked. The subdural space was drained for 36 hours.

The patient had a good post-operative recovery with no residual neurological lesion. On questioning he was completely oblivious of the happenings above mentioned.

Comment

Recovery from these lesions is not usually as uneventful as in the above case, as the venous bleeding may persist. Hence drainage is essential. Whenever there is an injury to the head in the anteroposterior direction, one must be on the watch for subdural hæmatoma, as the chances of the veins rupturing in such a type of injury we are greater. Exploratory burr-holes under local anæsthesia are often useful to find out and treat extracerebral hæmorrhages in head injuries and must be more frequently employed than at present. The dura must always be opened to exclude subdural hæmorrhage.

It may be noted that with a few more hours' delay in recognising and treating the condition, this patient would have died. The need for a careful watch is imperative in cases of head injury. Considerations such as these, were the reasons for opening Head Injury Centres in the West. Specially in cities and industrial areas, where head injuries are common, it is advisable to group the cases of head injury in a place where neurological care and neurosurgical facilities will be available. In general wards, such careful attention over the clinical condition of the patients with injured heads, may not be possible.

Summary

The importance of watching the state of consciousness in a patient with acute head injury is stressed.

Subdural hæmorrhages are classified and it is pointed out that timely recognition and proper surgery will save many valuable lives.

A case report is presented of a patient who developed a subacute subdural hæmatoma, and recovered with surgical treatment.

Acknowledgment

My thanks are due to Lt.-Col. D. S. Iyer, Surgeon, Government General Hospital, Madras, under whose care the patient was admitted and to the Dean, Government General Hospital, Madras, for permission to publish the case.

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CALCUTTA, JULY, 1952

DRUG MANUFACTURE IN INDIA

The medical profession as well as the suffering public are rightly alarmed over the prevalence of spurious drugs in our country. The manufacturers of these "drugs" were so long satisfied in preparing imitations of certain popular proprietary medicines. But of late they have widened the scope of their business and have taken to manufacture faked sulpha drugs and antibiotics. These life-saving drugs of spurious quality have become a menace to the profession and the public and require immediate attention of the State. Besides the spurious drugs, the attention of all concerned should be drawn to the drugs which are manufactured by some firms who seem to care very little for the standard specification. These drugs are also injurious and not safe for administration. During the war, a large number of drug manufacturing companies cropped up owing to the fact that imports of medicines were restricted and the bigger manufacturers were over-occupied with war requirements.

Approximately there are around Calcutta about 150 licensed firms carrying on drug manufacture. Leaving aside the few well-known and reputable manufacturing houses, there is a large number of companies which are manufacturing products for common maladies without having the prerequisite equipment essential for such undertakings. Besides fever mixtures, cough cures and general tonics, they have taken to manufacture of parenteral preparations like glucose solution for intravenous use, calcium gluconate, liver extracts and ampoules of alkaloids.

These manufacturing houses are carrying on under conditions which can only be described as alarming. They have no properly qualified technical staff, the installations are inadequate and the fundamental tests for standard and control are not done even for parenteral preparations. The glucose solution for intravenous use is prepared with distilled water of questionable quality. Besides, factories in several instances are located in residential houses with no adequate security and safeguard. In some cases, domestic kitchens or tenements without even a pucca floor have been converted into laboratories. In others the floor space is inadequate, the layout crowded and the general hygienic condition appalling. Naturally the drugs manufactured in such environments have every chance of falling short of the requirements so far as purity, potency and standard are concerned. These firms also are not only a menace to the profession, but to the society at large, as the administration of drugs manufactured by them ruins the people physically as well as financially. These firms are also disgracing the honest and scrupulous manufacturers who are sincerely striving to maintain the standard quality of their products.

The Chemical Manufacturers' Association in their own interest should come forward and induce the government to weed them out. From the situation as it has developed, we must advise the government to apply the most rigid restraint in the matter of issuing licences to manufacturers. The licence should without exception be granted after a thorough inspection of the factory. Drugs are life-saving agents and no leniency in this matter is permissible. Inspectors should be appointed to conduct surprise visits to the manufacturing firms and examine if everything is going on well there. Besides, a panel of technical experts should be appointed to pay occasional visits to the manufacturing houses, to check the report of the inspectors as well as to suggest improvements to the company.

Drug industry in India is still in its infancy. If mushroom manufacturers are not carefully weeded out, the industry in general will lose the confidence of the profession and the public. Naturally it will hinder the growth and development of the industry which we so much desire.

This discussion has a particular reference to Calcutta and suburbs. The police recently raided several druggists' establishments and "factories" turning out fake medicines. The racket has no doubt existed for quite sometime but these raids have brought fresh emphasis on the seriousness of the situation. While some of the retailers have been found to deal only in genuine and dependable products, those trading in questionable articles have been considerable. It would perhaps have been better for the public had the

Government published the names of those against whom charges have been substantiated.

Conditions in and around Calcutta are bad enough. We have a suspicion that these unscrupulous traders have extended their business all over India. It is time that every State should be vigilant over this matter and try to weed them out. The Central Government have a particular duty in this respect. Such stringent legislative measures should be enforced all over India that no trader can play with the valuable lives of our people.

NUTRITIONAL DEFICIENCY

India is faced with a grave crisis. The health of the people is fast deteriorating and the incidence of diseases is increasing by rapid strides.

The welfare of the nation depends primarily on the health of the people. So of all problems confronting us at present, the problem of health requires first and foremost attention.

The Government ration is inadequate and the peoples' earning is insufficient to supplement the shortage by purchases from outside sources. Naturally the people are insufficiently fed.

Malnutrition and undernutrition are the net result of the present average Indian diet. The caloric value of a balanced diet according to nutrition experts should not fall below 2,000 per head per day. But in India, the diet has been found to be far below the standard. The daily *per capita* consumption of food in terms of calories is 3128 in U.S.A. (1948-49 figures), 3062 in Canada, 2050 in Japan, 1986 in Burma and 1621 in India.

Agitation over the insufficiency of food has been continuing for a long time. The press and the platform are crying hoarse in drawing the attention of the Government to this matter. Doctors also never lose the opportunity in bringing home to the Government that nutritional deficiency is sapping the vitality of the nation and in a short time, a position may arise when this problem of health mignt develop into a national crisis.

The food policy of the Government needed earlier revision but practically no serious attention was given to it. The present alarming position has, it appears, opened their eyes. The Food Minister of the Central Government has planned a tour over the country to study the situation. He has already visited a number of places and has acquired a direct knowledge of what is happening in our country in this respect. His recent utterances go to show that he is convinced that the people, yes the majority of them, are living on inadequate diet. And he has assured adoption of measures which can alleviate the present situation. It has been said by him that food is not in shortage, the purchasing power of the people is low and they are unable to afford protective foods which usually cost more than cereals.

We are not concerned with any discussion as to whether food is in shortage or the money in the peoples' hands is short to meet the cost of food. Our object is to draw the attention of the Government to the fact that unless a balanced diet enough to raise the necessary calories, is arranged in the shortest possible time, a disaster is sure to come upon the nation crippling it in all spheres of activity. The government is responsible for the maintenance of health of the people and if indifference is shown to this matter, a time will come when no amount of curative medicine will be able to cope with the situation.

MEDICAL MEN IN LEGISLATURES

In the June issue we published the names of doctors who have been elected to the Indian Parliament and State Legislatures in the first general election under the new constitution. The names were collated with the help of data obtained through Provincial Branches of the I.M.A. The additional names since received are listed hereunder:

Legislative Assembly.

BOMBAY: 1. Dr. Madhav Narayan Birje; 2. Dr. Madhav Dattatraya Desai; 3. Dr. Bhavanishankar Padmanabha Divgi; 4. Dr. M. U. Mascarenhas; 5. Dr. Jivraj Narayan Mehta; 6. Dr. Trimbak Ramchandra Naravne; 7. Dr. N. N. Kailas; 8. Dr. Bhaskar Rambhai Patel.

TRAVANCORE-COCHIN: 1. Dr. P. T. Thomas; 2. Dr. M. Sivaraman Nair; 3. Dr. N. S. Pillai.

WEST BENGAL: Dr. S. P. Chatterjee (Coochbehar); Dr. S. K. Saha.

Legislative Council.

BOMBAY: 1. Dr. Joseph Altino Colaco.

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CURRENT MEDICAL LITERATURE

Chronic Cardiac Compression

Chambliss and others (*Circulation*, **4**: 816, 1951) give in the following lines the summary of their observation:

A critical pre- and postoperative study of 61 cases operated for chronic cardiac compression has been presented.

In this series, the patients were predominantly young men. The most common symptoms, in order of frequency of occurrence, were dyspnœa, ascites, œdema and orthopnœa.

The typical physical findings were venous distention, decreased precordial activity, distant heart sounds, pleural fluid or thickened pleura, an enlarged liver, and ascites and/or œdema.

The electrocardiographic findings were low voltage and primary T-wave changes. Thirtyone per cent of the cases had some type of arrhythmia. Broad, notched P-waves were found in 42·6 per cent of the cases.

Roentgenologic studies showed diminished cardiac pulsations. The hearts were of normal size or slightly smaller. Pleural thickening and/or fluid were present in 84·5 per cent. Pericardial calcification was demonstrated in 46 per cent.

In the cases having œdema, 21·4 per cent had total serum proteins less than 5 gm. per 100 c.c., and 37 per cent had serum albumin less than 3 gm. per 100 c.c.

Circulatory studies showed elevated venous pressure, slight tachycardia, slight decrease in pulse pressure, decreased vital capacity, prolonged circulation time, decreased stroke volume, increased blood volume, and normal or a slightly less than normal basal metabolic rate.

The operative mortality was 18 per cent.

A satisfactory result was obtained in 72·1 per cent. The operative results in this series may be compared with those of other surgeons. Of a total of 415 operated cases, satisfactory results have been obtained in 258 (62 per cent).

Postoperatively all circulatory function tests tend to return to normal with the exception of persistent primary T-wave changes.

Tuberculosis was the cause of the compressive scar in 28·2 per cent. No etiologic agent could be demonstrated in 57·7 per cent of the cases. Rheumatic fever was not proved to be the cause in any of the cases.

Follow-up studies indicate that the majority of the patients return to full normal activity.

The outcome was less favourable in those patients who were cyanotic pre-operatively or who had a pre-operative diagnosis of tuberculosis.

Physiologic factors involved in the production of the clinical picture of chronic cardiac compression are discussed.

Nutritional Factors in Cardiac Disease

Durant (*Ann. Int. Med.*, **35**: 397, 1951) writes that nutritional inadequacy may occur in congestive failure because the patient cannot afford a good diet, because his appetite fails because of anxiety, congestion of the stomach, or gastric irritation by digitalis or diuretics. In hyperthyroidism, failure may be due to increased metabolism with unsatisfied, increased food requirements. General inanition may result with reduced basal metabolism and reduced total energy metabolism. Under such conditions rest may be helpful. In hypertension, reduced nutrition and salt deprivation may be beneficial. Hypoproteinæmia and nutritional anæmia, should they develop, are more serious, and impairment of hepatic function usually helps to produce these conditions. Deficiency of thiamin is especially important in cardiac patients, although true beriberi in America occurs chiefly in alcoholics. One of the goals of therapy is the re-establishment of appetite, chiefly by B complex, with emphasis on nicotinamide. Salt substitutes are important. Cation exchange resins permit more real salt in the diet. Intravenous salt-free albumen may be desirable. The effects of long-standing deficiency may be so severe as to defy all attempts at correction. The total fat intake, both vegetable and animal, should be restricted.

Controlled *vs.* Free Diet Management in Diabetes

Wilson and others (*J. A. M. A.*, **147**: 1528, 1951) observe that two hundred twenty-one young patients with severe diabetes of 10 to 34 years' duration, with onset between 18 months and 30 years of age, were studied to determine the correlation between the type of management and the incidence and severity of the two most commonly observed degenerative vascular complications (retinopathy and arterial calcification). Comparisons were made between the vascular status of three groups of patients: 1. a "coma" group made up of those who had had one or more attacks of diabetic coma, 2. those who had followed a "free-diet" type of management, and 3. a "controlled" group comprising those who had maintained careful regulation of their diabetes. These comparisons revealed the following:

1. An increase in the frequency and severity of degenerative vascular complications of diabetes commensurate with increases in duration of the disease occurred.

2. For any given duration of diabetes, there was a significantly lower incidence of advanced degenerative changes among those patients who had maintained better control of their diabetes. Also, for each ensuing decade of duration of diabetes, the effects of differences in type of management became more significant.

3. No patient who followed a free-diet regimen of management showed both normal retinas and absence of calcified blood vessels after 20 or more years of diabetes, whereas 8 per cent of those in the controlled group did.

4. After 20 to 34 years of diabetes, more than 57 per cent of patients in the free-diet group showed advanced degenerative changes, whereas only 25 per cent of patients in the controlled group had such lesions.

These observations definitely support the concept that continuous, aggressive treatment, directed toward maintenance of physiologic conditions, is a better form of management of diabetes than the free-diet plan, which permits a constantly disturbed metabolic state, reflected in persistent hyperglycæmia and glycosuria.

Oral Manifestations of Deficiency Diseases

Sinclair (*Practitioner*, **168**: 133, 1952) writes that careful inspection of the lips, tongue, buccal mucosa and gums may give early indications of nutritional deficiencies. Deficiencies of certain vitamins of the B complex (riboflavine, niacin, pyridoxine, folic acid and vitamin B_{12}) and of iron, are particularly important; this is not surprising since all these nutrients take part in important cellular enzyme reactions concerned with the oxidation of substrates or the metabolism of protein. But two important considerations

TABLE SHOWING ORAL MANIFESTATIONS OF DEFICIENCY DISEASES

Nutrient	*Synonym*	*Enzyme systems concerned*	*Approximate daily requirement (mgm.)*	*Daily therapeutic dose (mgm.)*	*Some results of deficiency*			
					Lips	*Tongue*	*Buccal mucosa*	*Elsewhere*
Riboflavine ...	—	Flavo-proteins (tissue oxidations etc.)	1·5	5 to 10	Cheilosis Angular stomatitis	Purple swollen flat papillæ	? Swollen, soggy	Seborrhœic dermatitis Keratitis.
Niacin ...	Nicotinic acid	Coenzymes 1 and 2 (tissue oxidations etc.)	10	50 to 250	—	Red smooth sore	Red infected ulcers	Dermatitis. Diarrhœa Psychoses.
Pyridoxine ...	Vitamin B_6	Transmination and decarboxylation of aminoacids; tryptophan metabolism; histaminase	1(?)	10	Cheilosis Angular stomatitis	—	—	? Eczema.
Folic acid ...	Pteroylglutamic acid	Metabolism of tyrosine and histidine. Hæmopoiesis	0·1(??)	2	—	Smooth sore	Red ulceration	Macrocytic anæmia. Ulceration in gut.
Vitamin B_{12} ...	—	Aminoacid metabolism. Hæmopoiesis	0·001(?)	0·002	—	Smooth sore	—	Pernicious anæmia. Cord changes.
Ascorbic acid ...	Vitamin C	Metabolism of tryosine; formation of intercellular cement	25	200 to 500	—	—	—	Perifollicular petechiæ Gingivitis. Ecchymoses Bones and teeth.
Iron	—	Cytochromes (Hæmoglobin)	10	200 to 300 ($FeSO_4.7H_2O$) 40 to 60 (Fe^{++})	Cheilosis Angular stomatitis	Smooth sore	Ulceration	Pallor. Koilonychia.

arise therefrom. First, deficiencies of two vitamins may produce a break in the metabolic chain at nearby links, so that the signs of deficiency must, therefore, always be carefully sought and the origin of the deficiency investigated. Secondly, diets that are deficient in one member of the vitamin B complex are likely to be deficient in others, and therefore it is important to correct the fault that produced the deficiency rather than to treat the patient with a single pure vitamin.

For convenience, the main nutrients mentioned in this article are summarized in the accompanying table.

Therapeutic Applications of Protein Hydrolysates

Billings and others (*Edinburgh M. J.*, 58: 64, 1951) give in the following lines the summary of their observations;

Dietary supplements of protein hydrolysate are of no value in the treatment of patients suffering from peptic ulceration.

Protein hydrolysates such as Pronutrin have a limited application as gastric secretogogues.

In the preparation of poorly nourished patients for surgical operation protein hydrolysates are of limited value and in the immediate post-operative period are for various reasons contra-indicated.

The administration of protein hydrolysates by the intravenous route is safe provided certain precautions are observed but is of no value in the prevention of the so-called catabolic destruction of protein tissue following major surgical operations, and while not harmful, does not improve the condition of severely jaundiced patients.

Treatment of Peptic Ulcer

Todd (*Lancet*, 1: 113, 1952) writes that of the various methods of treating peptic ulcer only three are of proven value (1) diminishing the gastric acidity, (2) gastrectomy, and (3) psychotherapy (which has only a very limited application).

As a routine for the medical management of peptic ulcer, it is suggested that the patient, while carrying on with his work, should take alkaline tablets at hourly intervals throughout his waking hours (except at the usual meal-times, when he has his ordinary food instead). He should continue to do this until his ulcer is thought to be healed, and thereafter he should be told that the more closely he adheres to this regime, the less will be the chances of relapse.

The view is advanced that the onus of proving the value of rest in bed, absence from work, an artificial and monotonous diet, phenobarbitone, the eradication of septic foci, the avoidance of tobacco and alcohol, and the other orthodox remedies, should rest on their advocates, not on those who are opposed to them.

Head Injuries

Twelve main symptoms and signs are of special interest to the general practitioner in assessing the gravity of a head injury. They are as follows:

1. *Headache*—The absence headache does not exclude serious brain injury. The existence of headache for more than 24 hours after the receipt of the injury implies brain damage, providing that extracranial causes of headache are not responsible. Dural tension may exist without headache. The above statements are based on McGregor's work on 500 head injuries in 1942.

2. *Unconsciousness*—A period of consciousness after a head injury however short, indicates that any subsequent unconsciousness is due to secondary developments, such as increasing hæmorrhage. The slightest change in the depth of consciousness either one way or the other is an infallible sign of improvement or retrogression. Any injury leading to unconsciousness of more than an hour is usually associated with diffuse neuronal injury of a structural type in which many cells are permanently destroyed. When unconsciousness lasts for more than 24 hours the prognosis is serious.

3. *Aphasia*—This is inability, not due to unconsciousness, either to use or to comprehend language in any of its forms. When due to compression the prognosis is good if the compression is relieved early. When due to laceration of the brain it is permanent. When due to contusion it may pass off spontaneously. A patient who reaches a stage of consciousness sufficient to permit the recognition of aphasia will probably recover the power of speech.

4. *The Pulse*—In concussion the pulse is at first increased in rate and feeble. When reaction occurs it becomes slower and fuller. In contusion of the brain, with œdema of the contused parts and cerebral irritation, the pulse is full if the bulb is affected. A slow pulse in an unconscious patient usually means that the brain is severely compressed, probably by an extradural or subdural hæmorrhage. A fast, bounding pulse in comatose patients with stertorous breathing, indicates actual embarrassment of the medullary circulation. The vasomotor centre protects the medulla against the effects of compression by constricting the splanchnic vessels, thus causing more blood to reach the medulla (vasomotor reaction of Cushing).

5. *Blood pressure*—This is low in concussion but rises during the stage of reaction. Raised intracranial tension in a severely shocked patient causes a rise in the systolic pressure without improvement in the diastolic which remains dangerously low. The extent of the rise in the systolic pressure is an indication of the advancement of the compression. Beyond a certain point, however, this reaction cannot take place, the vasomotor centre fails, and respiratory efforts cease.

6. *Temperature*—This is subnormal in concussion. In the uncomplicated case it rises to about normal at the stage of reaction. In contusion it rises slightly above normal. If it falls again the prognosis is good, but if after a day or two it rises again there may be a slow, progressive bleeding or œdema of the brain. In concussion or contusion of the brain it seldom rises above 100-100·5°F. Extracranial causes of pyrexia being excluded, any rise above 101 degrees, whatever the depth of unconsciousness, points to severe intrinsic brain injury or to a profuse subarachnoid hæmorrhage. In compression the temperature rises to 100-103 degrees but the rise differs on the two sides of the body. Hyperpyrexia (106-110 degrees) indicates hæmorrhage into the pons.

7. *Respirations*—In concussion the respirations are shallow. They improve with the stage of reaction. In contusion they become slow. In compression they are first deep and fast, then deep and slow, and finally irregular. Stertor is a sign of impending death.

8. *Restlessness*—This is one of the commonest signs of any injury to the brain, but it is especially characteristic of cerebral irritation due to contusion and laceration of the

brain. In subarachnoid hæmorrhage the irritation of the blood in the meninges causes restlessness. This frequently occurs with fracture of the base of the skull. If the movements are incessant, excessive, writhing and purposeless there is likely to be severe bruising of the brain with profuse subarachnoid hæmorrhage. If the posture is normal and the movements are co-ordinated and purposeful, this indicates a milder type of cerebral injury.

9. *Paralysis*—When an artery is ruptured no local signs result until the outflow of venous blood from the skull is interfered with by the pressure of the effused blood from the ruptured artery. At this stage venous congestion causes increased excitability of the brain and irritative symptoms of headache, drowsiness and irritability. If the hæmorrhage continues it gains room by displacing blood from the capillaries of the bran, causing cerebral anæmia and inexcitability of the cortex with the clinical manifestations of paralysis. As the hæmorrhage is essentially local it affects primarily the brain in the immediate vicinity.

10. *Jacksonian Epilepsy*—Russel Howard defined this as a discharge of nerve force from the motor cortex resulting in muscular convulsions due to an irritative lesion in the cerebral cortex. Such an irritative lesion may and does occasionally occur in an acute head case from a depressed fracture or blood clot, as well as months or years later from cicatrization. Jacksonian epilepsy is a valuable localising sign when observed under the former circumstances and good operative results can be obtained by removing the causative lesion.

11. *Blood in the Cerebrospinal Fluid.*—This finding may be indicative of any of the following:

(*a*) Rupture of a vessel on the surface of the brain.
(*b*) Rupture of a sinus of the dura mater with an associated rupture of the arachnoid.
(*c*) Tearing of any vein or artery connecting the mobile brain with the fixed dura. This is particularly common in sudden arrest of the momentum of the brain as in a fall upon the head.

The finding of blood in the C.S.F. is therefore of diagnostic value, and profuse bleedings associated with unconsciousness is said to be of serious significance. It does not however indicate for certain that there is brain damage (as some authors would have us believe) nor does it enable the surgeon to diagnose extra-dural hæmorrhage.

12. *Increase in the Pressure of the Cerebrospinal Fluid*—The pressure of the C.S.F. normally varies between 50 and 150 mm. water. The G.P. does not usually measure this pressure with a manometer, but it can be roughly gauged by the rate of flow from the needle. Low normal or subnormal pressures occur in shock, old people with poorly nourished bodies, in the later stages of coma, and when there has been loss of C.S.F. from the nose, ears or subgaleal space. Subnormal pressures rarely occur in head injuries otherwise. Increased pressure in a head injury may be due to extravasated blood, cerebral œdema or hydrocephalus.—*Medical World*, **76**: 97, 1952.

Megacolon

The management of megacolon in childhood has been difficult in the past because of uncertainty about its aetiology but recent reports from workers in Britain and the U.S.A. have led to a rational classification of the condition into symptomatic megacolon, idiopathic megacolon and Hirschsprung's disease. In symptomatic megacolon a gross obstruction is demonstrable; this may be due to a stricture, stenosis, tumour, or nerve lesion, such as is associated with spina bifida. The treatment, of course, is to remove the cause of obstruction. In childhood cases of idiopathic megacolon form the largest group. The condition is probably acquired as a result of faulty bowel habits, fissure in ano, or other minor causes which lead to gradually increasing passive distension first of the rectum and then of the sigmoid colon. Radiological evidence of dilatation of the anal canal and rectum (terminal reservoir type) or of part or all of the sigmoid colon (tubular dilatation type) differentiates this group clearly from true Hirschsprung's disease. The condition is essentially benign and responds to persistent conservative treatment, including bowel washouts. Hirschsprung's disease forms the third group in this classification. The abnormality in this serious congenital disorder has been traced to the terminal segment of intestine, which is of normal or slightly narrowed calibre, while above it the bowel is dilated and hypertrophied. Diagnosis now depends on the radiological demonstration of the normal calibre of the rectum and part or all of the sigmoid colon. The pathological changes eluded detection for a long time. Only by microscopical examination of the terminal part of the intestine can it be seen that the ganglion cells of Auerbach's and Meissner's plexuses are missing. The resulting lack of co-ordinate peristaltic movement causes secondary dilatation and hypertrophy of the bowel proximal to the abnormal segment. In the light of this new ætiological conception the rational treatment of Hirschsprung's disease is resection of the aganglionic distal segment by rectosigmoidectomy. Lee and his colleagues (*Surg. Gynec. & Obstet.*, **91**: 281, 1950) in the U.S.A. have paid a tribute to the work of Bodian, Stephens, and Ward at the Great Ormond Street Children's Hospital for making "intelligent selective treatment (of megacolon) possible." These British workers have now demonstrated the essential histopathological lesion in 40 cases. Similar findings have been reported in the U.S.A., and in this country Burnard has discussed the features of the disease in young infants. Ewenson and Bill were the first to devise rectosigmoidectomy as a treatment for Hirschsprung's disease. Their method was adopted and slightly modified by Stephens, working at Great Ormond Street. The long-term results of this treatment over a period of two to three years have been remarkably good.

Bodian, Carter and Dard have also recently reported a genetic study of Hischsprung's disease, and though they have not yet been able to define the mode of genetic determination they were able to put forward evidence showing that the chances of a male sibling of a known case developing Hirschsprung's disease were about 1 in 5. The chances of a sister being affected were much smaller. In this disease the length of the aganglionic segment may vary; in a small number of cases it can be considerably longer than the rectum and sigmoid. Bodian and his colleagues point out that a genetically determined disturbance may occur at any stage of differentiation of intestinal nerve cells, which, they suggest, usually proceeds in a craniocaudal direction. Thus larger or smaller aganglionic segments would be produced according to early or late interference with normal embryological development.—*Lancet*, **2**: 346, 1951.

Use of Wangensteen Suction in Surgery

Ochsner (*Minnesota Med.*, **34**: 990, 1951) writes that probably nothing has done more to facilitate the recovery

of individuals subjected to abdominal procedures than the routine use of gastro-intestinal suction in the immediate postoperative period. As a result of irritation of the peritoneum regardless of the cause, there is a functional inactivity of the gastro-intestinal tract, which persists for varying periods of time according to the degree of trauma. In infections of the peritoneum, trauma to the peritoneum is prolonged and for this reason the associated adynamic ileus is of much more serious importance and significance than that which follows an operative procedure. The author has employed the Wangensteen tube routinely in all patients subjected to laparotomy except the simplest of procedures, such as an appendectomy. In this way they have been able to do away almost completely with postoperative nausea and vomiting, abdominal distention, and gastric dilatation. As a result of trauma and its associated ileus, the secretions which are normally poured into the upper part of the gastro-intestinal tract, that is from the stomach, the duodenum, the liver and pancreas, and which normally are transported by peristalsis into the lower part of the intestinal tract from whence they are absorbed, remain in the upper part of the digestive tube and if not removed, cause nausea and vomiting. The length of time gastric suction must be maintained varies according to the degree of trauma, but generally does not exceed twenty-four to seventy-two hours. By careful auscultation of the abdomen, one can determine the return of peristalsis, and as soon as peristaltic sounds become active, the tube can be removed safely.

Although there are some indications for the use of a double tube, these indications in our hands have become less frequent as time passes. In any case, however, in which decompression of the lower intestinal tract is desired and obtained by means of the double tube, it is imperative that gastric suction be maintained likewise, because otherwise accumulation of secretions in the upper gastro-intestinal tract will occur and will be accompanied by nausea and vomiting. During the time that an indwelling gastric catheter is maintained and suction is applied, nothing is allowed by mouth, because otherwise large amounts of electrolytes will be washed out of the stomach by the gastric lavage. Obviously, the fluids and electrolytes removed by gastric suction must be replaced parenterally.

Precancerous Lesions of the Gastrointestinal Tract

Underwood (*Texas State J. Med.*, **47**: 744, 1951) writes that *œsophagitis*—thermal (taking of hot meals and drinks) and chemical (regurgitation of acid gastric juice) is probably the most important precancerous lesion of the œsophagus. The earliest recognisable symptoms of an œsophageal lesion are indefinite, intermittent and unimpressive, such as, (1) 'food-sticking' temporarily, (2) a queer feeling upon swallowing, (3) a vague sensation of cramping in the neck, or (4) a feeling of a lump arising in the throat. The presence of these symptoms merits radiologic and œsophagoscopic examinations, combined with biopsy, if possible. *Gastric polyps* may be become malignant and gastroscopic examination is helpful in determining their status. *Gastric ulcers* should be considered malignant until healed and it is often better that all recurrent gastric ulcers should be considered malignant until healed and it is often better that all recurrent gastric ulcers and ulcers which fail to improve with intensive medical management for at least two months should be resected on suspicion of malignancy. If a diagnosis of benign ulcer is to be accepted, histamine-fast achlorhydria should be excluded.

Gastritis also may prove precancerous, specially atrophic gastritis. If premalignant gastric lesions produce symptoms they may logically fall into one or more groups: (1) symptoms indicating pyloric narrowing, (2) peptic ulcer syndrome, (3) hæmatemesis or melena, (4) symptom suggesting a lesion of lower end of the œsophagus, and (5) gastric dyspepsia during a long period. Patients with such symptoms should be examined radiologically, gastroscopically and clinically at least with a mind to exclude malignancy.

Among precancerous lesions of the *colon*, *polyps* in general and *chronic ulcerative colitis* in particular seem to offer the greatest potential danger. Certain benign anal lesions should be removed or carefully observed. As to precancerous symptomatology, any lesion which alters the function of the colon may alter the bowel habit and should immediately arouse suspicion. There may be slight bleeding, indefinite rectal discomfort or discomfort referred to the sacral segment of the spine. Alternating constipation and diarrhœa are late symptoms. Digitorectal examination and sigmoidoscopic examination should never be omitted and when in doubt should be repeated. A biopsy specimen should be obtained if possible. Roentgen examination by means of a double contrast barium enema is essential for lesions above the recto-sigmoid area. Occult blood in stool should be sought and gross blood and mucus, when present, should stimulate the clinican to make an extremely careful examination.

The Eye in Hypertension

Riddek (*Practitioner* **166**: 571, 1951) deals with the subject under the headings of (1) complaints of the patients, and (2) ophthalmoscopic observations.

Complaints of the patients—The patient may observe that the white of the eye has become blood-shot with or without a history of excitement or straining by the patient. This condition is a *subconjunctival hæmorrhage*. In hypertension an intracranial hæmorrhage may affect any portion of the visual pathway, from the optic chiasma to the cerebral cortex giving rise to a variety of *visual defects* for which the testing of the visual field with finger method may be of use. *Sudden complete loss of vision* from a spasm of the central retinal artery or from an embolism of the vessel, *a slowly developing loss* over a major portion of the field of vision due to a thrombosis of the central retinal vein with extensive retinal hæmorrhages, a *general haziness of vision* due to the presence of a vitreous hæmorrhage, *a progressive deterioration in vision* marking the advancing progressive lesions of hypertensive retinopathy, *visual distortions* e.g. straight lines appearing to be crooked, letters diminished or enlarged and so on due to small displacements of the rational elements are some of the visual complaints of the patients in hypertension.

Ophthalmoscopic observations—Earliest changes are: (1) the crossings where one vessel passes over the other are grossly altered and the vessels cross over each other at an angle approaching a right angle (normally, vessels pass over each other obliquely without any obvious alteration in angle at the crossing). (2) The return flow of blood tends to be restricted thus leading to distention of the distal part of the vein. When the condition has advanced more there are (1) striate hæmorrhages in the nerve fibre layers of the retina which may absorb leaving little or no trace, and (2) deeper hæmorrhage of a more circular type situated among the nerve elements causing serious disturbance of vision resulting even from quite small lesions, particularly

in the central area of the retina—the more deeply placed lesions may give rise to disturbance of the retinal pigment layer and permanent changes may result.

Streptomycin in Ophthalmology

Sorsby and others (*Brit. M. J.*, **1**: 19, 1952) give in the following lines the summary of their observations:

Streptomycin, 0·5 gm. in 1 ml. of water, is well tolerated on subconjunctival injection. Such doses give considerably higher intraocular levels when injected subconjunctivally than on intramuscular injection. The intraocular levels are higher still and persist up to 36 hours if adrenaline 1: 1,000 is the solvent.

In the experimental animal a destructive *Ps. pyocyanea* infection of the cornea is fully controlled by one subconjunctival injection of 0·5 gm. of streptomycin in 1 ml. of adrenaline 1: 1,000.

For clinical purposes streptomycin to be injected subconjunctivally should be dissolved in 10 min. (0·6 ml.) of water to which 5 min. (0·3 ml.) of adrenaline 1: 1,000 is freshly added.

Cllinically, streptomycin is effective when used subconjunctivally in infections of the cornea due to Gram-negative bacilli. As these lesions are highly destructive, early treatment is essential, and the characteristic clinical appearance of such infections facilitates early diagnosis. Streptomycin locally is also invaluable in acute conjunctivitis due to Gram-negative bacilli.

Systemic streptomycin therapy has proved helpful in tuberculous keratitis. It has given poor results in presumably tuberculous iridocyclitis and in periphlebitis. In phlytenular ophthalmia it tends to cut short severe attacks, and probably reduces the frequency and severity of relapses.

Ocular Findings in the Newborn

Cook and Glasscock (*Am. J. Ophthal.*, **34**: 1407, 1951) write:

One thousand eyes of newborn infants were studied under atropine cycloplegia. Of this series, 74·9 per cent had hyperopia ranging in strength from less than one diopter to 12 diopters. Over 50 per cent of the hyperopic eyes had a correction of less than one diopter to three diopters.

Myopia, ranging in strength from less than one diopter to 12 diopters, was present in 25·1 per cent of the cases. Eighty-eight per cent of the myopic eyes took a correction of less than one diopter to five diopters.

Astigmatism was present more frequently in hyperopia (38·8 per cent) than in myopia (27·3 per cent).

Emmetropia is a rare finding in the newborn.

Incomplete pupillary membranes were found in 20·4 per cent of the cases.

A total of 48 eyes (4·8 per cent) had retinal hæmorrhages usually located in or near the macular area.

Disc-shaped or ring-form cataracts were present in two eyes.

Hyphema was found in one eye immediately after birth following a forceps delivery.

Atropine reactions were noticeably scarce with only four eyes showing a chemosis of the conjunctiva. No systemic reactions to atropine were noted.

Allergic Manifestations in Otology

Dintenfass (*Ear, Nose and Throat Monthly*, **30**: 647, 1952) presents the following classification in an endeavour to simplify and relate the various allergic manifestations of the ear:

A. *External ear and auditory canal*—1. Contact dermatitis, 2. Eczema, 3. Urticaria, 4. Purpura.

B. *Middle ear and eustachian tube—primary or secondary to nasal allergy*—1. Conduction deafness, 2. Clinical otitis media, 3. Sensation of fullness, 4. Itching of the ear, back of the nose or between the nose and the ear, 5. Deep pain—dull or burning, 6. Sensation of tightness or drawing.

C. *Internal ear and auditory nerve*—1. Preceptive deafness, 2. Nystagmus, 3. Meniere's symptom complex, 4. Vertigo, 5. Tinnitus.

In the diagnosis of allergy, as well as for its treatment, a complete history is important. The allergic state can be recognized also by physical examination, when characteristic changes of the mucous membrane, including polyps of the nose and nasopharynx, are present. As an adjunct, routine skin tests are performed. Patch tests are necessary for the diagnosis of contact dermatitis. Scratch and intracutaneous tests are applied alone, or in combination, in the study of inhalant and food allergy. Other laboratory studies include blood counts for eosinophilia and the leukopenic index, for confirmation of the allergic state and food sensitivity, respectively. Some investigators found that the response to epinephrine, consisting in alleviation of symptoms following subcutaneous injection of the drug, is helpful in the diagnosis of aural allergy. A cytologic report on nasal smears, particularly of secretion from the eustachian orifice, should be obtained routinely from patients suspected as being allergic.

Prophylaxis—A complete appreciation of allergy is essential to the prophylaxis of aural diseases. Studies which are especially applicable are those concerned with the prevention of deafness, which often follows repeated infections of the poorly resistant allergic mucosa of the nose and ear. Children who mainfest allergic conditions or who have a family history of allergy deserve careful observation and therapy.

Active Therapy—The essential principles of therapy are enumerated:

1. Specific hyposensitization should be undertaken when feasible; 2. Environmental factors responsible should be removed or avoided; 3. Food causing sensitivity should be omitted from the diet; 4. Local and general therapy should be instituted when indicated, with use of epinephrine and ephedrine-like compounds or antihistaminic drugs; 5. The programme for the detection and treatment of allergy should be performed in conjunction with rhino-otologic therapy. It is important that neither be neglected.

Residual Defects in Meningococcic Meningitis

Ross (*Arch. Neurol. & Psychiat.*, **63**: 89, 1952) writes that in order to compare the incidence of residual defects following serum therapy, sulphonamide therapy, and combined sulphonamide-penicillin therapy in patients with meningococcic meningitis, 51 unselected persons who had recovered from this disease 1½ to 20 years previously were given physical and

neurologic examinations. Thirty-two received electroencephalographic and psychometric studies as well.

The results in each of the three differently treated groups were analyzed statistically with respect to the mean number of defects per patient, the percentage of patients having defects, the incidence of psychometric and physical defects, the incidence of complications, and the relation of coma to the incidence of defects.

It was found that, although sulphonamide and sulphonamide-penicillin therapy have greatly reduced the mortality rate as compared with that for serum therapy, the incidence of complications and the number and percentage of defects in the form of physical, neurologic, electroencephalographic, or psychometric residua showed no statistically significant differences for the three methods. It was observed, however, that physical defects were three times as common in patients treated with serum or with sulphonamides as in those who received combined sulphonamide-penicillin therapy. In the last group defects were discovered only on psychometric evaluation. Presumably, the addition of penicillin lessens the incidence of severe complications, which lead to physical residua.

The presence or absence of coma bore no relation to the incidence of residua.

Aureomycin in Whooping Cough

Arit (*Munchen. Med. Wchnschr.*, **93**: 2354, 1951, Ref. *Practitioner*, **168** : 97, 1952) in reporting on twenty children severely ill with whooping cough and treated with aureomycin observes : 15 of these, including 7 infants, had bronchopneumonia, and one an encephalopathy. The early results in all cases were encouraging, but a permanent cure was obtained in only 50 per cent. Eight children replased. To avoid relapses, the author recommends a dosage of at least 50 mgm. per kg. of body weight. Children treated with aureomycin should, if possible, be isolated from other children with pertussis, following the procedure adopted in children with scarlet fever treated with penicillin. For pulmonary complications aureomycin by itself is often not sufficient, and sulphonamides, penicillin, or streptomycin may be necessary. In young infants, vomiting, meteorism, and diarrhœa may complicate aureomycin therapy—side-effects which occur in adults only after prolonged administration. One child developed a severe stomatitis, another extensive herpes labialis simplex. These side-reactions can be prevented by early administration of vitamin B complex. Some children develop a ravenous appetite and put on weight.

CURRENT TOPICS

The Rt. Hon. Sir Earle Page, G.C.M.G., C.H., F.R.A.C.S., F.R.C.S. (HON.), Australian Minister for health in his address to the Canadian Medical Association, Toronto, said:

Partnership of the State, the Medical Professions and the Community

The test of the efficiency of a national health scheme must be improvement of the health of the nation and the individual—the lessening of disease, progressive elimination of causes of disease, and a continuous rise in the qualitative excellence of medical practice. A scheme satisfying this test will come only from the active, continuous partnership of governments, the medical and allied professions and the individuals of the community. I hope to show that the judicious union of governmental aid with nationwide voluntary insurance against sickness and disease can create such a partnership between the government and the individual in which the traditional intimate doctor-patient relationship that has been the glory and inspiration of medicine since the time of Hippocrates, can be maintained and developed with the minimum of governmental control or interference between doctor and patient.

This partnership is a recognition that the State, individuals and the medical profession have obligations in a national health scheme. All will benefit: The individual will gain better health, longer life and an easier mind against the expense of sickness. The State will gain from more efficient production, from less manhour loss, and from greater national income and social stability. The doctors will benefit from a sense of security in their profession, from the opportunity of seeing their patients at an early stage and cutting down the duration of disease, with more time to study and absorb the medical experience gained from the treatment of each patient.

Such a partnership destroys nothing, but will make use of all those factors and organizations that have been built up over centuries to assist the restoration of health and prevent disease. This conception aims to keep everything that is good, and to reject the obsolete. It will not destroy past advances in the medical art, but will make provision for the use of all future advanced methods through nationwide insurance against the cost of sickness and hospitalization Our method of attack leaves everyone free to carry out the most effective handling of health problems—the doctor, the patient, the hospital management and staff, the chemist and the voluntary insurance organization. It keeps alive the element of initiative and competition in service that really produces progress.

Such an arrangement will leave the Government much freer to help in its own role of finance. Under the system proposed, the Government will have strict control over its own costs, leaving management of the insurance field to the voluntary societies. The patient and doctor both have a definite interest in preventing waste and abuse of time, skill medicine and equipment, while the voluntary societies have a direct interest in preventing fraud.

In brief, our view is that a satisfactory health scheme can be satisfactorily operated only when there is complete co-operation and harmonious relationship between:—

(*a*) The providers of health services; that is, the hospital administrators and the medical, pharmaceutical and nursing professions.

(*b*) The government, whose role should be concerned mainly with financial assistance, with perhaps some co-ordinating functions.

(*c*) The community, who must be educated to partake of the services as they become necessary, and not to abuse any privileges.

The important group is, of course, the community, and it is well to bear in mind that no health service is satisfactory

unless it extends to all sections of the community. If governments are to have a hand in assisting health services with financial aid it would be most unfair to exclude the wealthy who, after all, contribute largely to the revenue.

Voluntary prepaid insurance, backed by governmental aid, should be an attractive proposition to at least 85 per cent of the people. Even those in the low income brackets should find no difficulty in meeting the low premiums—less than the price of a packet of cigarettes per week in some cases—which will provide the necessary coverage for their needs. I shall show that the remaining 15 per cent can also be adequately cared for.

The Challenge to the Medical Profession

In the last analysis all medical care must be by individual doctor to individual patient. In actual fact, therefore, no real national health service can be provided without the willing and wholehearted co-operation and guidance of the doctors of the nation.

Here comes the challenge to the medical profession. Doctors are essentially self-dedicated and set apart to the service of their fellow man to save life and bring health. Their passionate devotion to these aims tends to make them become completely absorbed in the practice of their profession. But the time has come when, in the interest of the future existence and the future health of our race, and for the preservation of their own high and noble profession, doctors must take a special interest in the manner in which health problems are handled by the Government and the public.

Australian Health History

The last half century has seen in all countries a tremendous improvement in vital statistics, especially the reduction in the mortality rate and incidence of many diseases. This reduction has been due mainly to two factors—the remarkable discoveries of medical research into the causes of disease by various germs and methods of diagnosis, and the application of the discoveries to health problems on the advice of the medical profession.

I instance the improvement in health figures in my own country. Census figures show that the Australian infantile mortality rate per thousand per annum dropped from 118·40 in 1901 to 31·99 in 1947 and is still declining. At all ages up to 40 the rates of mortality in 1947 were approximately one-third of the corresponding rate of 1901 for males, and one-quarter for females. At the age of 60 the rate for males in 1947 was 70 per cent of the corresponding rate in 1901 whilst the female rate at 60 was only 60 per cent of that of 1901.

Australian life tables—complete expectation of life—show that the expectation of life at the date of birth, according to the experience of the period, was in 1901 at 51 years for males and 54 for females. The census of 1947 showed that this expectation of life had risen to 66 years for males, and 70 for females. Taking the expectation of life at date of birth as a measure of the life efficiency of those born, it may be said that the experience of 1947 indicates a life efficiency about 29 per cent in excess of that for 1901.

These results are an expression of the cumulative efforts of the medical profession on the whole health front during this period. Insistent advice and pressure of doctors in Australia, as in other countries, have ensured an improvement in water supplies, in sanitation and in immunization against infectious diseases. By the research of doctors, new germs, new drugs and new methods of treatment have been discovered. Doctors have learned by experience the effective use of these. The result is seen in this remarkable improvement in national health.

Necessity of Professional Control

But this remarkable advance may easily be lost overnight. The health of civilization is standing on the edge of a precipice if medical direction in the use of these discoveries is removed.

The experience of malaria in New Guinea in the last war is very illuminating in this respect. In the 20 years between the first and second world wars, remarkable improvements were made in the treatment and prevention of malaria. Yet, in the first six months of the New Guinea campaign against the Japanese, our soldiers, though under the strict governmental direction of Army control, suffered such disabilities from malaria, dysentery and scrub typhus as to reach the enormous annual proportion of 5,000 per 1,000 troops engaged; that is to say, 6 divisions would have been needed to keep 1 division in the field. This rate of disability was equalled only by the East African campagin in World War 1 when our armies were practically without medical supplies.

At the time this alarming position in New Guinea occurred there were available to the Army such experts in malarial authorities as Sir Hamilton Fairley, Professor of Tropical Medicine of London University, and the most distinguished men from Harvard, Yale and Johns Hopkins, but the combatant commanders did not realize the vital importance of supreme medical control of this condition. At that time I was sitting in the Australian War Cabinet and raised the question of its rectification with the Australian Prime Minister. He requested Churchill and Roosevelt to insist upon medical discipline on approved lines and the full use of equipment and drugs available. Within a few months these measures reduced the disability rate from malaria to the lowest ever known in any war.

This incident gives a note of warning that these great advances of ours may go overnight. The ghastly health story of the internment camps in Europe and Asia show what can happen if full use is not made of medical achievements.

The point I wish to make is that while the health plan I outline leaves the proper functions of doctors completely free of governmental control, yet it is indispensable for its success that our best medical minds should disengage themselves long enough from their absorbing personal, professional work to ensure that health problems are wisely dealt with. Nationalization of medicine must be resisted at all costs. Mere transfer of a problem to governmental control does not solve that problem—it may even intensify it.

In any case, should not our free democratic people ask themselves why, when they have been able to obtain such magnificent results from our present health system, they should discard that system and attempt to sail on the uncharted sea of nationalized medicine?

In all medical nationalization schemes pressure to cover the whole field at once has led to chaos and those most needing care often do not receive priority. The better way surely, is to move steadily upwards, step by step, building on the solid foundations of our past achievements and

maintaining the great traditions of service and intimate doctor-patient relationship.

In our Australian national health scheme each of the partners, that is to say, the government, the medical and allied professions and the community, can take appropriate inter-related steps in their own role and sphere. The essence of this plan is to lessen the impact of sickness and, by the reduction of sickness, to lessen the consequent loss of productive capacity throughout the community. By means of a basic grant of governmental aid directed to prevent or shorten disease, it aims to stimulate throughout the whole community the spread of prepaid voluntary insurance schemes covering the greater part of hospital and medical costs. This lessening of the cost of individual medical and hospital treatment will encourage the patient to seek early diagnosis and treatment and thus start the beneficial circle to reduce the total cost of treatment both human and physical.

The Role of Governments

The Government's role is to take such initiative in preventive measures as will secure community assistance and action.

Firstly, Federal and State governments can raise steadily the standard of medical treatment by the provision of ample numbers of highly-trained and experienced specialists, general medical practitioners, nurses, pharmacists and research students. This contribution would be by Federal and State governmental aid in the capital cost of building, and provision of modern equipment to universities, medical schools, teaching, base, district and community hospitals. Combined with this, provision should be made for a home nursing service which is often cheaper and happier for the patient. Provision should also be made for the treatment of the aged and chronic in special wards in institutions instead of treatment in general hospital beds.

In this connection the Australian Government is lessening the entry into hospitals of the aged by providing free general medical practitioner service and free medicine to pensioners and their dependants, both in their homes and in the doctor's surgery. This is achieved by an arrangement with the Australian division of the British Medical Association on a concessional fee-for-service basis.

Secondly, the governments can take the initiative in improvement of sanitation by extending water supplies and sewerage installations. In the '30's the Australian Government carried these services into many small hamlets and towns by making an agreement to provide one-third of the interest and sinking fund costs on the condition that State governments and local communities each provided one-third. The effect of this measure on typhoid was seen in one town of about 15,000 people. There the annual recurrence of 700 cases of typhoid dropped to 2 or 3 which came from outside its area.

Thirdly, governments can improve nutrition and health by standardization of the quality and purity of food and drugs, with a definite lessening of sickness. The Australian Government has taken a further step in the improvement of nutrition by the free provision of milk to school children up to the age of 13 years in creches, kindergartens and public and private primary schools. The milk is given to the children during the morning recess and uniformly brightens up the youngsters for the succeeding lessons. The Education departments of the several States are actively co-operating in this programme.

Fourthly, the Australian Government has made a direct attack on the killer diseases and on the incidence of infectious diseases by the free provision, on a doctor's prescription, of costly life-saving and disease-preventing and immunizing drugs to all sections of the community. Prevention of disease and curtailment of its duration by such means reduce the cost of hospital and medical care, both from the point of view of the government and the individual, lessen the country's loss from industry, increase total wealth production of the nation and pay for themselves several times over.

It is imperative that doctors should discipline this system of free drugs. In Australia the Federal Council of the British Medical Association has given the Government an advisory council of seven distinguished specialists and professors of pharmacology which decides what drugs should be free. The Council has also appointed a committee of four outstanding doctors to discipline doctors and chemists and prevent indiscriminate use of these powerful drugs. The result has been that in Australia the cost of this benefit has approximately equalled the original estimate.

Fifthly, my Government has taken a preventive measure by the provision of grants for medical research. The co-ordination of activities in this field has been brought about by the creation of a National Health and Medical Research Council which lays down the work to be done and prevents overlapping. The composition of this body consists of the Director-Generals of the Federal and State Health Departments, representatives from the medical faculties of universities and distinguished specialists.

The sixth preventive measure is the passage of laws making compulsory radiographic chest examinations in order to discover early tubercular infection, and the provision of liberal allowances to actual infectious tubercular cases and their dependants to enable such cases to rest sufficiently long with their minds at ease to arrest their disease and cease to be a danger to the public.

Partnership of Government and Voluntary Insurance

The preventive measures I have mentioned have been undertaken wholly by the Government because it is felt that the community benefit flowing from them may be as great or greater than the individual benefit. There now remains the field of medical and hospital benefits in which the individual gain is undoubtedly the greater. The Government's view is that this field should be covered by a system of prepaid voluntary insurance, operated by voluntary non-profit-making organizations experienced in that particular field. To encourage the development of such organizations and to make the benefits attractive to their members, the Australian Government proposes to make available substantial grants-in-aid.

Insurance Against Medical Costs

The present system of insurance against medical costs tends to be on a flat rate, to be limited by a definite income earning capacity and to be confined almost exclusively to employed persons.

A wide extension of voluntary insurance to the community as a whole, and especially to the self-employed and rural elements in the community, can be secured by a basic grant of governmental aid towards extending the actuarial benefits possible under existing insurance schemes. Insurance would thereby be made so attractive as to induce many people to seek insurance cover without great expenditure on

enrolling agencies. This grant-in-aid would be given only if participating organizations at least matched the government grant for each item of medical treatment.

The grant, plus an equivalent amount of insured benefit would meet approximately 80 to 90 per cent of the fees charged to the lower income groups. Higher income groups would insure themselves for greater benefits, rendered more valuable by the existence of the governmental grant. There would be no direct connection between the government and the medical profession. Agreements would be made on a long-term basis with organizations providing insurance cover.

Special Feature of the Australian Plan

I should now like to elaborate on a feature of our plan which is somewhat unique; that is, the proposal to make available to the patient, through his organization, the appropriate amount of governmental subsidy, even where the organization is precluded from paying a benefit under its own rules.

In a number of circumstances an organization, because of actuarial considerations, does not pay a benefit to its members. For instance, there is the usual condition that a member must go through a probationary or waiting period, usually two months in ordinary cases, and nine or ten months in confine cases. Most organizations have a maximum amount which can be drawn on their funds during a calendar year. Then again, organizations will not usually pay a benefit for treatment of certain chronic disease, or for treatment of a complaint the symptoms of which were in evidence at the time of joining. We propose to make the governmental subsidy available to members of organizations in all these cases. Thus a man may become a member on his way to the doctor and be eligible for the grant.

Our view is that this will have a twofold effect: Firstly, voluntary insurance will be made very attractive. The man who would not ordinarily be bothered to join an organization will see the advantages, and once he becomes a member we think he will continue membership. Secondly, some portion of his medical expenses will be met by the government, and thus he will be relieved of the expense to that extent. From a financial point of view, the grant may often exceed his yearly contribution. We also think that the governmental grant will enable the organizations to liberalize their exclusion conditions.

In order to cope with the "in and out" person, that is, the man who pays one or two contributions to an organization to obtain the governmental grant and then drops out, we propose to follow the practice of the organization. If a member is in arrears with his premium but is still regarded as being financial by the organization, the governmental subsidy will follow along with the organization's benefit. However, where the member becomes unfinancial under the organization's rules, and the organization refuses to pay a benefit until the arrears are paid, the governmental subsidy will also be withheld. Of course, an unfinancial member who pays his arrears will immediately be eligible for the governmental subsidy.

"Unable" Section of the Community.—A question sometimes asked is how is it intended to cover those people unable to join the voluntary prepaid insurance organization? These may be divided roughly into two groups: Those who are financially able to contribute as members of organizations, but have been unacceptable for membership in the past because of age or for health reasons, and those who are acceptable for membership but have not sufficient finance to maintain membership.

Regarding the first group, the organizations have already indicated a readiness to liberalize their rules in the matter of age limits, and rarely refuse membership on the grounds of ill health. They may, of course, make the membership conditional, but it has already been explained that the governmental subsidy will flow to the patient in these cases.

The second group, that is, the indigent class, presents more difficulties, but in Australia the great majority of these are already provided for under the Pensioner's Medical Service which takes care of age, invalid and other pensioners and their dependants. It is estimated that not more than about 5 per cent of the population will consist of indigents who are not already covered, and consideration is now being given to ways and means of reaching these people. It is thought that the solution will be either by way of subsidy through the organizations or by direct screening and subsidy by the Government.

Insurance Against Hospital Costs

The principle of prepaid voluntary insurance, similar to that proposed for medical expenses, is being applied in Australia in regard to hospital costs.

The several preventive measures I have already outlined, by lessening the incidence of sickness, will improve the position of hospital finances generally and the accommodation position.

A still further improvement is being brought about by encouraging domiciliary treatment of minor illnesses. I have mentioned in passing the domiciliary treatment of pensioners and their dependants which is achieved by an arrangement with the Australian division of the British Medical Association, under which this group receives free treatment and free medicines, and the doctor is remunerated by the Government on a concessional fee-for-service basis.

When hospitalization is inevitable, however, we are meeting the position by an extension of the prepaid insurance principle. By joining a voluntary non-profit-making organization which handles hospital insurance, a person or any of his dependants will become entitled to a governmental grant of 12/- (twelve shillings) per day towards the costs of hospitalization. As there is a requirement that the voluntary organization must provide at least six shillings per day, a minimum of eighteen shillings per day is available to meet the hospital costs. In actual practice the total insurance is something more than that sum.

As in the case of medical benefits we believe that abuse is best avoided by leaving some portion of the hospital costs to be paid by the patient.

Further, as in the medical benefits plan, the governmental daily grant will be available to insured persons in circumstances where actuarial considerations preclude the organizations from paying benefits from their own funds; for instance, during waiting periods, or where the maximum period under the organization's rules has expired, and for specific diseases not recognized by the organization.

Summary

In summing up we think:—

1. That emphasis should be placed on the preventive side of medicine. This is particularly important in a country

where there are shortages of hospitals, hospital staffs and hospital equipment.

2. A health service should extend to all sections of the community. Therefore governmental grants-in-aid should be available to all the people.

3. In order to avoid abuse, and thus allow financial aid and medical services to be used to the fullest extent in genuine cases, the patient should meet a small part of actual expenses when they are incurred.

4. A successful health service requires complete co operation between governments, the providers of the service and the people.

We are convinced a health scheme which satisfies all of these fundamentals will operate more smoothly than one which antagonizes certain sections, and which leaves a large body of the community without adequate cover against the risks of sickness and disease.

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WHAT TYPE OF A DOCTOR DO YOU WANT?

"What type of a doctor do you want?" was the subject of a speech delivered by Dr. Chamanlal Mehta, M.D., D.S., F.R.F.P.S. (GLAS.), before the Bombay Rotary Club on 13-5-52. He said:

Health is one of the primary necessities of the people and yet in India, it is the subject least thought of by the Governments and the public. I chose to bring my question to you and through you to the country, as the future progress in health and prosperity in the country will depend on the answer to my question—"What type of a Doctor do you want?" This is one of the most important problems before the people and the present is the most opportune time for its consideration. The new Legislative Bodies and the Ministers, if told right at the beginning of their term of office what people want, it would facilitate their work and they would avoid doing something against the wish of the people.

The Health Survey and Development Committee—popularly known as the Bhore Committee—reported in 1946 that the state of public health in India was low as was evident by the wide mortality in the community as a whole and in particular among such vulnerable groups as children and women in the reproductive age period, the expectation of life was low and incidence of preventable diseases was high. Malnutrition and under-nourishment reduced the vitality and power of resistence of an appreciable section of the population. The existing Health Services were altogether inadequate to meet the needs of the people; while lack of general education added materially to the difficulty of overcoming the indifference and apathy with which the people tolerated the insanitary condition around them and a large amount of sickness that prevailed. They very strongly pressed on the government the necessity to take immediate steps to improve the condition of the people and help them to promote positive health. They also drew the attention of the government to the great inadequacy of the Health Personnel. The country required a large number of doctors. They recommended long and short term measures to produce more doctors in the country.

Prior to the achievement of Independence, we accused the British Government of negligence, callousness and selfishness in not paying proper and adequate attention to the health needs of the people

On India coming into her own in 1947 and popular Governments coming into power both in the centre and state legislatures, this question of increasing the number of doctors in order to give adequate medical and public health service to the country, was taken up by them; but the country's finances will not allow them to implement the recommendations of the Bhore Committee in all its aspects. The report was an excellent one. It contained a fund of information and a number of suggestions. The National Ministries hadn't even the patience to study the report properly and it was put on the shelf. Unfortunately, the Public Health, Medical Relief and medical education were transferred to the State Governments. The nationalism of the ministers of the states appeared to mean, in this sphere, revival and consecration of the old heritage of the people of India, I mean, the Ayurvedic system of medicine. A demand was also made by the practitioners of indigenous systems of medicine to give them recognition and encouragement.

In good old days, when India was the only country civilized and intellectually advanced, we had a highly developed system of medicine, which not only supplied the needs of the country, but became a source of inspiration to other nations like Greeks and Egyptians. Greek and Unani systems of medicine have their foundations on the teachings of Ayurvedic medicine.

Since the days of invasion of India by foreign powers along with the general deterioration of the people and of their prosperity, the Ayurvedic system of medicine came to a standstill first and deteriorated later. While this was the state of affairs in India, Europe went ahead making use of the knowledge we had originally imparted to them. The modern medicine is the result of long experience, vast experimentation and solid research on the old teachings. During this process of development all that could not stand the scientific test was eliminated. The rest was accepted and studied further. New ideas, new theories, new diagnostic methods, and therapies were put into practice. Whatever could not come upto the mark of scientific study and whatever was not found beneficial was again thrown off. Thus the evolution in medical science goes on non-stop. In the words of Shri C. B. Gupta, the Ex-Minister of Health, U.P. and a great lover and respector of Ayurvedic medicine "the Western medicine to-day is only a modern version of what Charak and Shushrut practised and taught in this country centuries ago. Progress has been made since those masters practised the healing art. Progress has been made in countries other than our own, but there is no reason to conclude that modern scientific medicine is materially different from the Hindu Healing Art. Only the toddler has grown. The child has come to age. Great progress has been made in the domain of the healing science and we, who gave Ayurved to the Greeks and to the world cannot afford not to benefit by what the world has to give to us to-day. We cannot refuse our masses the benefit of modern surgery, bacteriology, x-ray, radium and hundred useful medicines like vitamins, hormones, sulphonamides, penicillin, streptomycin, etc. We cannot say that the system is European and that it is not ours,

that it is foreign to our soil. Science belongs to the entire world. It does not belong to a people, a country or a continent. The Russians, the French, the Germans, the English, the Americans, the Japanese and the Australians practise the same system of medicine. They never say that it is not theirs and that they will practise only the indigenous system. How can then we act otherwise? If we have to serve and save our millions, we cannot afford to be narrow-minded. This will be like cutting our noses to spite our faces. He further says "We have in our Ayurvedic Texts accumulated experience of ages. It is the treasure home of rich heritage. It is the heritage, which we should explore and make use of to our best advantage; but I would like to stress one thing emphatically that any advance, which is not supported by scientific investigation and practice should be curbed down. There can be no question of any unscientific system supplanting the scientific system. Whatever is good in Ayurvedic and Unani medicine and stands to the test of scientific scrutiny must be translated and synthetised in the modern medicine and added to the fund of world knowledge." I think no better counsel could have been given to the people of India and to the medical profession in the country.

Our Prime Minister and our Central Health Minister have repeatedly expressed similar views and sentiments. The Indian Medical Association also has clearly expressed their views on similar lines. The Association recommended that at least one Research Institute with the provision of first class laboratories and well equipped hospitals be started in each State, where various aspects of Ayurvedic teaching can be scientifically tested by the Ayurvedic Pandits with the collaboration of men of science. At the end of five years period, the result be assayed and whatever is found good be absorbed in the modern medical science. It also urged that there should be one medical system in the country and one type of doctors. If these views are accepted and implemented, we will have a uniform system of medical education and we will be able to produce a large number of doctors trained suitably for the needs of the country in a much shorter time and at much less expense.

All nations in the world, all universities, medical educationists, the World Health Organisation and World Medical Association favour medical education of a uniform standard and doctors of uniform qualification. The Bhore Committee said the same thing. The Chopra and Pandit Committees appointed by the Government of India to report on the indigenous systems of medicine and suggest ways and means to stimulate the study of Ayurvedic and Unani Medicines have also expressed their views in favour of a scientific uniform system of medical education in the country.

A Conference of Health Ministers was held under the Chairmanship of the Central Minister of Health and addressed by the Prime Minister. Inspite of the Prime Minister and Central Health Ministers expressing their views in favour of evolving a scientific medical system in India and producing well-trained doctors who can discharge their responsibilities efficiently, the State Ministers acted according to their own preferences and prejudices. You will be surprised that though the Government of India appointed a strong committee under the Chairmanship of Col. Sir Chopra to report on the indigenous systems of medicine, the State Governments appointed eleven such Committees for the same purpose.

The result has been that instead of producing a uniform system of medical education and well-trained doctors, we have to-day in the country as many as twelve types of doctors, recognised and registered by some states, allowed to practice—but not registered by others. We have—

1. Graduates of modern scientific medicine.
2. Licentiates of modern medicine.
3. Qualified vaidyas.
4. Non-qualified vaidyas.
5. Qualified Hakims.
6. Non-qualified Hakims.
7. Non-qualified Doctors of modern medicine.
8. Qualified Homœopaths.
9. Non-qualified Homœopaths.
10. Qualified mixtures of Ayurved and modern medicine.
11. Three year trained Doctors of Madhya Pradesh.
12. Village Vaidya of Madras State.

In addition to this, Diplomaed Homœopaths, will soon appear on the field as the Ex-Minister of Health of a progressive state of Bombay has made a provision for this class of doctors in the Homœopathic Act, his parting gift to the State. All the world over, no homœopath is allowed to practise his profession unless he has a basic medical qualification, but our ministers think differently.

If there is any truth in the press report, we in Bombay State will have a fourteenth category of doctors added to our health armoury by the new Minister of Health, who favours to have a Diplomaed Ayurvedist. It requires serious consideration how each of the above categories of doctors can serve the people and how useful or dangerous they are likely to be to the country.

The Ministers of Health, when asked as to why they were producing such inferior types of doctors, their answer was that people wanted them and that they were good enough for the rural areas. The rural population had never had the benefit of any medical relief except perhaps a non-qualified village Vaidya. They had neither education nor any opportunity of seeing any system of medical relief. How can you expect them to express their opinion on the subject? They have no ideas as to what will be good for them. Whatever was given to them they accepted without a word of protest. Given them a Vaidya and a modern doctor, they will prefer the latter. The so-called synthetised products of Podar Ayurvedic College are the most inferior types of men of modern medicine and none of them is an Ayurvedist. All of them practise modern medicine and hardly any one goes to the rural areas. Thus it is not true that people really want such inferior types of doctors. The second statement that the inferior doctors are good enough for rural population is most irritating. The State Governments profess to be working towards improving the condition of the villages and making the rural population healthy and economically strong. If that be so, how can they place lower values on their lives than those of urban population? On the contrary, their requirements are for much better trained doctors than those practising in urban areas, because they have no facilities for consultation or hospitals and other diagnostic aids. It is high time the people made clear what they wanted and demanded the same. The answer to my question should be given by the people in clear and emphatic terms before the new Legislatures and Ministers begin to work and we will have to guide the people, and help them to give their reply. If this is not done, the State Governments with their fads and prejudices will bury us deeper in the mire already created and then God help the country.

NOTES AND NEWS

WHO FELLOWSHIP PROGRAMME

1951 was the fifth year in which the WHO fellowship programme aided governments by providing opportunities for study abroad for selected personnel. During the year, 665 fellowships were awarded to candidates from 74 countries; 511 of these awards were financed by WHO, the remainder being administered by the organization but paid for by other sources.

Like other organizational activities, the fellowship programme is following a trend towards decentralization and regionalization: 66 per cent of the 1951 WHO awards were intra-regional. This trend is also reflected in the subjects selected for study, these being determined by the needs of individual countries as expressed by regional offices or by governments. A partial list of the subjects for which fellowships were granted last year follows:

Subject	*Number*
Public-health administration and related subjects	72
Control of tuberculosis, veneral diseases, and malaria	101
Sanitation	50
Maternal and child health, paediatrics ...	48
Nursing	28

Other awards were made for studies in rehabilitation of the handicapped, health statistics, and industrial and occupational health, as well as in clinical and medical sciences and education.

An increasingly large number of fellowships are being granted for group-training courses, seminars, symposia, etc., many of them sponsored by WHO. Of the 1951 awards, 41 per cent were of this nature.

Base of Awards—WHO fellowships are available to (1) Member States and Associate Members of WHO, (2) trust and other territories for whose international relations WHO Member States are responsible, and (3) territories administered by international authorities established by the United Nations.

They are intended to provide opportunities for training which it is not possible to secure in the countries of the candidates for fellowships, to be an integral and essential part of a project or programme planned by a government, and to assist in strengthening health services and thereby to raise the general level of health within a country. They are usually awarded for not more than one year nor for less than six months, except in the case of special short-term fellowships of 30 days' duration for a participation in group-training courses sponsored by WHO.

An application for a fellowship should be submitted directly to the candidate's government. Applicants for short-term fellowships are generally nominated by their health-administrations, the request being sent to the director of the WHO regional office of the region in which the candidate's country is situated.

Qualifications of Candidates—Candidates for fellowships should meet the following qualifications:

1. They must have not less than two years' experience in the subject they wish to study. 2. They must have exhausted the opportunities available in their own country for study of that subject. 3. They must choose for study a subject directly connected with the health programme of their country, preference being given to applicants for training which is necessary for a specific project. 4. They must undertake, in writing, to continue in, or enter the service of, their national health-administration—or a technical institution approved by it—for at least the first three years after their fellowship. 5. Normally, they should not be over 35 years of age where the retiring age is 60 or above, nor over 50 where the retiring age is below 60. 6. They must be able to speak, read, and write the language of the country in which they propose to study.

Reports required—Fellows are required to submit certain reports to WHO during, and after, their period of study: a monthly report, describing the activities of the month and listing the institutions visited and the principal teachers under whom work was done; a final report, upon completion of the fellowship, giving a comprehensive account of the studies and an evaluation of what was learned, in relation to its possible application to future work; and semi-annual reports, to be submitted for two years after the fellowship ends, describing the Fellow's duties in his post and telling how he is able to apply what he learned during his study period. Governments are also requested to report, two years after completion of each fellowship, on how the Fellow has been employed since his return, how he contributed to the national health-programme, and what further use the government intends to make of his services.

Publication by fellows—WHO has the first right to publication of any paper which a Fellow writes on work done during his fellowship. A paper which is not considered suitable for publication in one of the Organization's periodicals is returned to the Fellow, who may then submit it to other journals, provided he states that the work was done under a WHO fellowship but that the observations made, and the opinions expressed, are not necessarily those of the Organization.

Information booklet available—To meet the need for a ready source of information concerning its fellowship programme, WHO has recently published a pocket-size booklet for the use of governments and prospective Fellows. Included in this booklet are details concerning the purpose and objectives of the programme, the award and duration of fellowships, selection of candidates and required assurances, travel arrangements, payment of stipend, publications by Fellows, reports, fellowships financed by other sources (UNICEF, TEAD, etc.), and forms for application.—*The Chronicle of WHO.*

MADRAS MEDICAL COUNCIL

At a meeting of the Madras Council of Medical Registration held on 23rd May, 1952, Dr. D. V. Venkappa has been elected President of the Council. Dr. Venkappa is a well known figure in the medical profession of this state and a veteran office-bearer of the Indian Medical Association.

WEST BENGAL COUNCIL OF MEDICAL REGISTRATION

Extracts from minutes of meetings:

Government Notification regarding recognition of the L.M.F. qualification of the East Bengal Faculty (East Pakistan) obtained prior to July 1950 was recorded. (Ref: meeting dated 27-2-1951).

The decision of the Government of India rescinding the condition of scrutiny by the Factory Medical Officers of the

medical certificates issued to non-gazetted employees of the Ordinance Factory at Ishapore was recorded. (Ref: meeting dated 21-8-1951).

The following diplomas were recognised as registrable as additional qualifications. (Ref : meeting dated 21-8-1951).

(1) D.O.M.S. of the Calcutta University.
(2) Diploma in Industrial Health of the Royal College of Physicians and Surgeons, London.

REDUCTION OF MEDICAL EXPENSES

Dr. A. D. Mukharji, M.L.A., Editor, Journal of I.M.A. on 13th May, 1952, while speaking at the Rotary Club, Calcutta on reduction of medical expenses of middle class families said :—

The ideal conditions for reduction of medical expenses of an average middle class person in this city of Calcutta would have been the introduction of a comprehensive national health insurance scheme by the State. This would have ensured the supply of medical aid and accessories to treatment, either free of cost or on payment of a reasonable contribution, which is expected to be paid by the people without any murmur.

But circumstanced as we are it is not known whether such a laudable scheme would ever be introduced here. But before the introduction of such a scheme, I would think that opening of co-operative treatment centres on community or regional group basis in this city would reduce the expenses considerably. In such a centre there should be some qualified medical men who would see patients free of charge at the clinic and prescribe medicines worth not more than a rupee to be supplied to the patients. Balance of the cost of medicines worth more than a rupee is to be paid for by the patient's family. The Doctor would get a fixed allowance for this service and would visit patients in their residence at reduced fees fixed by the treatment centre. The sum total of this scheme would be an assured minimum remuneration for the doctor and considerable reduction in medical expenses of the family. The centre should also arrange for specialist treatment by experts at considerably cheaper rates. For this it would be necessary to get a group of families, in a particular area, working together on a co-operative basis. I know of such community treatment centres being run in this city of Calcutta quite successfully.

To get positive health for the posterity and reduction of the medical cost, other factors have also to be considered *e.g.*, sufficient supply of wholesome and unadulterated foodstuff with adequate caloric value for the people. Government and Municipal agencies must keep vigilance on adulteration and inflict deterrent and summary sentences on the anti-social elements who indulge in adulterating foodstuffs. For the maintenance and improvement of nutrition of the children, the problem of the supply of pure milk in adequate quantity must be tackled first. Either the Government or the Corporation or both jointly should open model dairies outside the city limits of Calcutta and supply to the people pure milk at a reasonable rate. To ensure positive health the living conditions of the people must also engage the attention of all concerned. The present over-crowded and ill-ventilated housing conditions should be changed. For this, model houses on co-operative basis should be constructed either by the middleclass population or by the Government and the statutory Improvement Trusts jointly to give the people more hygienic living rooms with sufficient air-space and sunlight providing for green grassy belts in between. In this connection personal, domestic and environmental hygiene should also be considered as important factors. Modern trend of medicine is to focus attention more on the prevention of diseases than their cure. I would therefore suggest that conditions should be introduced where the incidence of disease can be reduced to the minimum which will ultimately lead to the automatic reduction of the medical expenses for the average family.

ALL-INDIA MEDICAL LICENTIATES CONFERENCE

Dr. Manohar Lal Kapur, President of the 38th All-India Medical Licentiates' Conference held on 24th December, 1951 at Meerut in course of his address said:

"There is an imperative need for arriving at a standard and type of Medical Education that would produce a sound general practitioner. The present standard laid down by the Indian Medical Council as stated in the preamble to the Act is for controlling and establishing a minimum higher standard of medical education and qualification. Like other Medical Councils in European countries and America, the Indian Medical Council should lay down the uniform minimum standard of medical education and qualification. Our Association stands for uniform standard of medical education and qualification in the interest of Medical Science and effective Medical Relief and above all in the interest of the consolidation of the profession in our country."

Regarding the Indian Medical Council, he said; "The I.M.C. Act 1933, which divides the Indian Medical profession into exclusive castes and which keeps a large majority of medical men outside the pale of the Act, is the blackest deed of the foreign rulers who ruled the country till 1947. This piece of legislation was enacted against the universal opposition of the Indian medical profession. It is common knowledge that the Act was so constituted as to please the vagaries of the British Medical Council.

The Act of 1933 has done immense harm to the body medical of this country. The licentiate medical men who are eligible for registration on the Provincial registers have no place in the Indian Medical Council. The Medical personnel who have the ability, integrity and intelligence to practise the art of healing on the state scale have been designated as non-registrable under the I.M.C. Act, 1933. This is a piece of curious logic and the misfortune is that this inequitable piece of legislation is on the statute even though the administration of the country has gone into the hands of our kiths and kins.

He also discussed the questions of unitary type of medical services, A.M.C., indigenous systems of medicine and family planning, and requested Licentiates to participate in the WHO, as he hoped that through this organisation, the nations of the world would come still closer and pave the way for the lasting solution for the maintenance of positive health and prosperity of mankind.

CORRESPONDENCE

The Editor is not responsible for any views expressed by contributors

A CASE OF SUB-ARACHNOID HAEMORRHAGE

Sir,—The following annotation is submitted as an interesting report for your publication if you so desire. I have not found any similar episode in the limited literature at my disposal.

Case Report—N. Rao—Telegu, male, aged 46 years was admitted to the Tata Main Hospital for tuberculosis. On admission, apart from the signs, symptoms and radiological evidence of a tubercular infection at the upper zone of the right lung, he had no other abnormal findings. He had a history of giddiness occasionally. He was given morphine grain 1/4, atropine sulphate grain 1/100 on 28-7-50 at 9-30 A.M. An A.P. needle was introduced into the chest under novocaine 2 per cent infiltration. The pleura was found to be markedly thickened and the A.P. was abandoned. At 11-30 P.M. I was called to see him when he was found unconscious. He was restless. Cranial nerves—nothing found. Limbs slightly spastic. Extensor plantar response on the right side with absent abdominal reflexes. K. J. and A. J. +. Lumbar puncture revealed a fluid uniformly stained with blood. The c.s.f. report was:—Freely mixed with blood; R. B. C.s numerous; organisms—nil; no A.F.B. seen. The case was also seen by Lt.-Col. Khan, Physician in charge, who agreed with the diagnosis of sub-arachnoid hæmorrhage. The next day the lumbar puncture was repeated to confirm the diagnosis. A full blood picture revealed: Total WBC 19,200; poly. 87 per cent and lympho. 14 per cent. Cisternal puncture also revealed blood mixed with c.s.f.

The patient became very boisterous and had to be kept under paraldehyde sedation. The lungs showed only the previous signs of an infiltration at the right upper zone. On 31-7-50 he recovered sufficiently to recognise people and asked for water etc.

At this time investigation revealed :—

Serum calcium	...	10-9 mgm%.
Bleeding time	...	1 minute 30 seconds
Coagulation time	...	3 minutes 50 seconds
R.B.C.	...	3·8 million
Hæmoglobin	...	11 gm.
C.V.	...	35
M.C.V.	...	92 cμ
M.C.H.	...	29 rr.
M.C.H.C.	...	31%
W.B.C.	...	14,400
Poly.	...	77%
Lympho.	...	21%
Eosino.	...	2%
Platelets	...	2,00,000

He improved slowly and was discharged on 10-8-50. Subsequently I learn that he was never quite normal mentally. He had occasional convulsions and died on 14-12-50 at his native place after a convulsion the previous day.

I freely admit that tuberculosis, A.P. etc., and the subarachnoid hæmorrhage were probably a mere coincidence. I can find no reference to it in the literature except that tuberculosis is mentioned as a contributing factor in the etiology of subarachnoid hæmorrhage.

I am not prepared to say that the hæmorrhage was a complication of A.P. but it is an interesting coincidence. I am etc.

F. J. BILIMORIA, M.B., B.S., M.R.C.P., T.D.D.
Tuberculosis Medical Clinic,
Tata Iron & Steel C.C. Main Hospital,
Jamshedpur, 10-1-1952.

A CASE OF ALLERGIC SHOCK FOLLOWING INJECTION OF VITAMIN B_1

Sir,—On 4-1-52 at 10-30 A.M. I was called in to see a patient B.D. of Bilasipara aged about 35 years at her Calcutta residence for some minor ailments such as acidity, indigestion and general depression. On examination nothing abnormal could be detected except the subjective symptoms stated above. After a discussion with her I gave her an injection of 1 c.c. of thiamin chloride 100 mgm. per c.c. intramuscularly at 10-45 A.M.

To my utter surprise and dismay, within 30 seconds of the injection she began to complain of a severe burning sensation all over the body even within her generative organs, dryness of the tongue, dyspnœa, nausea and extreme agony of indescribable nature. She was at once made to lie down on the adjacent coach and in a moment complete unconsciousness prevailed. There was no pulse at the wrist, the extremities were cold and eyes rolling with conjunctival reflexes almost nil; respiration short, shallow and stertorous with froth coming out of mouth and nostrils; Heart sounds muffled, almost inaudible. Apparently she was in a state of complete collapse and hovering between life and death.

I at once started giving injections of cardiorespiratory stimulants and analeptics one after another in quick succession and arrangements for saline transfusion and oxygen administration were also made. After 45 minutes an injection of percorten 10 mgm. was given. At about 12 o'clock she regained her consciousness to some extent with the return of heart sounds but otherwise she was as low as before. Continuous oxygen was administered with the stimulants.

At 1-30 P.M. the pulse could be felt at the wrist and respiratory and other distresses were on the wane. At 3 P.M. there was all round improvement in her general condition but not without extreme prostration.

On the following day, the improvement in all respects was well maintained but she began to have incessant and profuse watery discharge P.V. with fishy odour. This was probably due to the hyperæmic condition of the cervix and capillary hæmorrhage within the tissues after shock. Subsequent progress of the case was uneventful.

My intention to publish this case report, of course with the kind permission of the patient herself for which I am grateful to her, is to ascertain from the profession the incidence and frequency of such accidents and their causation. I am etc.

24-1-1952, BISHNUPADA BANERJI, M.B.
Calcutta.

MEDICAL ETHICS AND RESPONSIBILITIES

Sir,—I shall be highly obliged if you kindly publish this letter in your esteemed Journal.

I have read the letter of Dr. S. K. Bhattacharya published in the February 1952 issue of the Journal and think it necessary to express what I feel regarding it.

A letter, published in the organ of the I.M.A. which is a member of WHO is read by the medical profession of the whole world and one can guess how it will reach. We should not write anything which lowers the dignity of our noble profession in India. I protest against the publication of such a letter. Medical men of our country maintain the highest form of professional conduct by all the means in their power.

How medical ethics in its truest sense can be maintained in a country, where 75 per cent of the population are illiterate and quack-minded, where the doctor cannot attend his patients in time especially in rainy season for want of good roads and where there are no laboratory facilities? Does our learned friend know that penicillin is being injected in cases of pernicious malaria and other life-saving antibiotics and sulpha drugs used right and left by the quacks? Does our friend know that cases like tetanus and eclampsia are treated by witchcrafts with the idea that the patients are haunted by ghosts? The hundred years of foreign rule have made us like this. What we want actually are mass education, to make them health conscious and abolition of quack system by our National Government. Our noble profession in India is going ahead and doing its duties to the suffering humanity inspite of thousand difficulties in the way. I am etc.

8-4-1952.

SAROJ KUMAR CHATTERJEE,
Hony. Secretary,
I.M.A. Kotalpur Branch.

MYOTONIA CONGENITA

Sir,—Re: the case note "Myotonia Congenita" by Amal Chakraborty, M.D. (CAL.), published in the April issue, *J. Indian M. A.*, 21: 314, 1952, the author writes "only one case appears to have been recorded so far (Amir Chand and Chutaki, 1945)." May I draw the attention of the author to an article "A case of Myotonia Congenita" by S. C. Chatterjee, published in the *J. Indian M. A.*, 5: 111, 1935. I am etc.

Calcutta,
29-4-1952.

S. C. CHATTERJEE, M.B.,
M.R.C.P. (LOND.),

REVIEW

THE COST OF HEALTH—By Ffrangcon Roberts, M.D., First edition, 1952. Published by Turnstile Press Ltd., 10 Great Turnstile, London, W.C. 1, pp. 220, Price 16s.

Plans, like pet children, have a way of not moving on the rails designed for them by their fond authors. Plans almost grow a personality and blaze unpredictable trails. This has happened with the famous—and perhaps the most discussed plan of recent time—Beveridge plan which was later embodied in the National Health Service Act of 1946.

The Beveridge Report in 1942 estimated the cost of a comprehensive health service for the U.K. at £170 m. and predicted the development and the consequent reduction in its need, would cancel out leaving the cost unchanged in 1965. The present cost would come to much more than £400 m., had the Treasury not imposed the ceiling at that figure. In fact, the net expenditure in 1950-51 came to £500 m.

But "even the official cost of the Service does not tell the whole tale, for it takes no account of the inadequacy of the service provided in relation to the demand. Dr. Roberts advances four possible explanations for this "paradox": first, the conquest of diseases may be more apparent than real; secondly, the advance of medicine rapid as it is, is not enough to catch up with the incidence of ill-health; thirdly, the provisions made for treatment are not a true index of the incidence of ill-health; and fourthly, the advancement of medicine itself may paradoxically increase the incidence of disease.

Dr. Roberts has marshalled a mass of formidable data in this volume under review, to show that during the decade after the publication of the Beveridge Report, medicine has made vast strides. Not only that, the rate of progress itself is increasing. To borrow the cosmogonist's terminology the world of medicine is expanding explosively. In such a set-up the cost of any health service is bound to increase by leaps and bounds, till it comes to such a figure that no Government can bear the burden. The question, "How much health a nation can afford?" Dr. Roberts asks is therefore very pertinent.

Altogether it is a serious book for the serious reader. It has proved of absorbing interest to the reviewer.

Incidentally Dr. Roberts has slipped up when he says (p. 48): "The cause of scurvy is the absence from the diet of one of these vitamins (vitamin A)."

S.P.C.

YOUR QUESTIONS

Correspondents should give their names and addresses (not necessarily for publication) and include all relevant details in the questions which should be typed. Questions of medical interest only will be acceptable for this section. They should be sent in a separate envelope marked "Your Questions." Questions of general interest will be published in preference. Lack of space precludes answering all the questions received.

Q. 1. Do small doses of Penicillin produce resistance in the organisms?

I have found that a single dose of Penicillin 200,000 units at a time brings about a cure in cases of Pneumonias in infants.

2. Can there be any idiosyncrasy in them?

3. Is there any difference in the dosage of Penicillin according to age?

4. Is there any necessity of giving the Penicillin every three hours?

Ans. 1. Yes, certain organisms produce penicillinase which inhibits penicillin activity. This may be natural with certain organisms as in the case of E. coli, some strains of Staphylococci. But this may also be *acquired in organisms initially susceptible existing in sublethal concentration of penicillin.* Another factor which should be appreciated is that *antibiotics in sufficiently low concentrations may act as biotics,* enhancing the growth of the organisms.

2. Idiosyncrasy to penicillin is rare. Since purification of penicillin such reactions have been extremely rare with crystalline penicillin. Very rarely though, rashes (urticarial) may appear during the course of penicillin administrations exactly mimicking serum sickness. Such reactions, however, are not uncommon with procaine penicillin.

3. No: Even children are given fairly high doses of penicillin parenterally. It is not essential to stick to the method of calculation of the dose on the basis of body weight (1,000—1,500 units per lb. body wt.) in children.

4. No: In many infections fairly satisfactory results are obtained by giving the injections 8 hourly (200,000 units I.M.) or even 12 hourly in doses of 300,000 units I.M.

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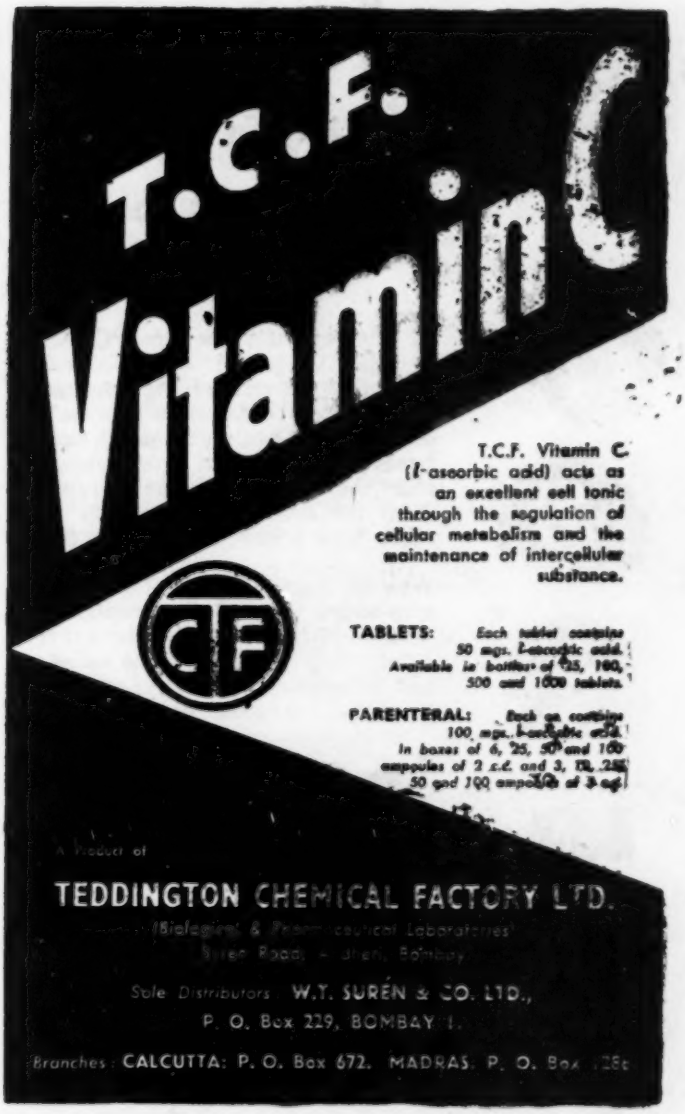
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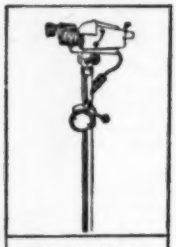

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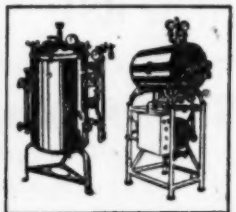

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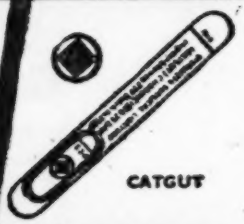

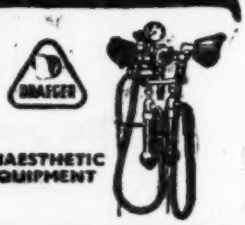

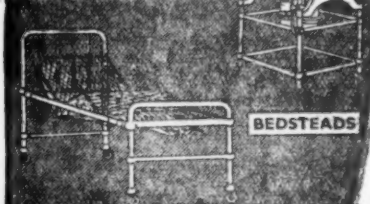

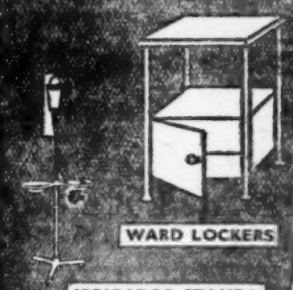

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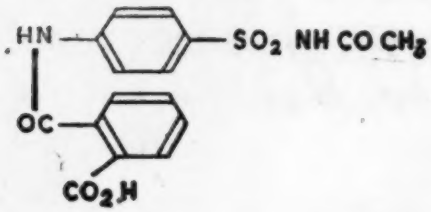

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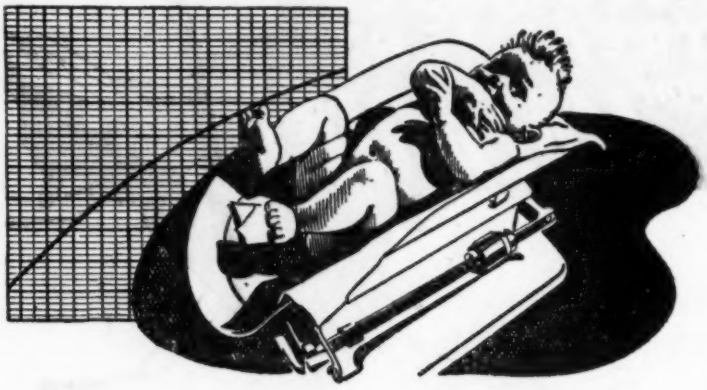

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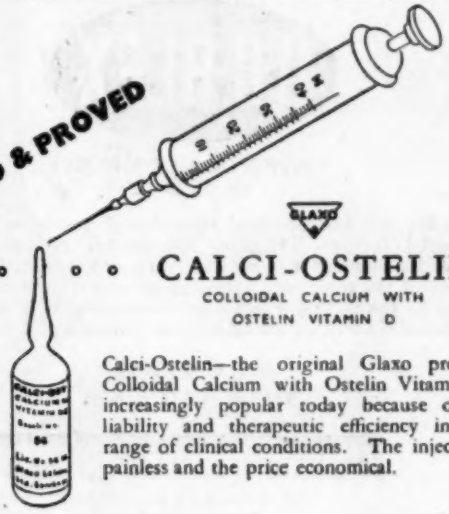

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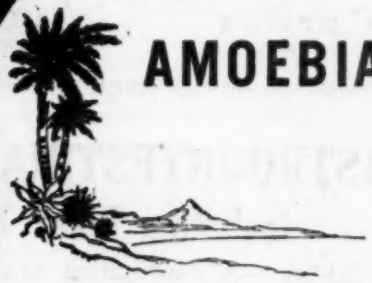

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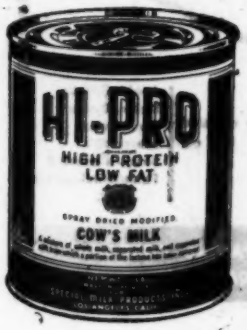

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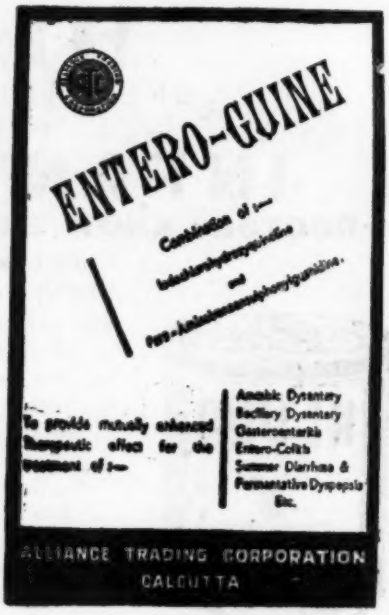

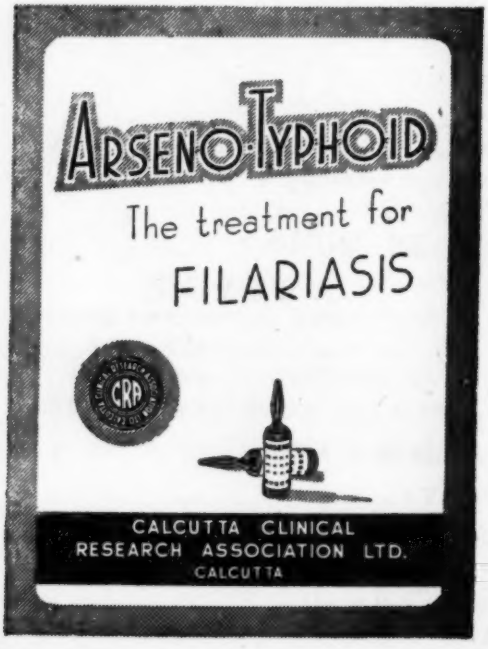

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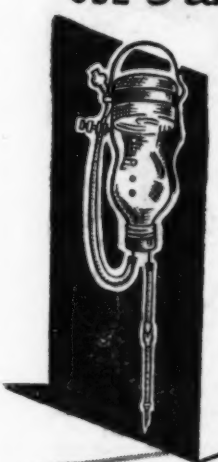

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